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UNIVERSITY OF ILLINOIS

THE UNIVERSITY OF MINNESOTA

BULLETIN

Vol. VIII

APRIL 1, 1905

No. 4

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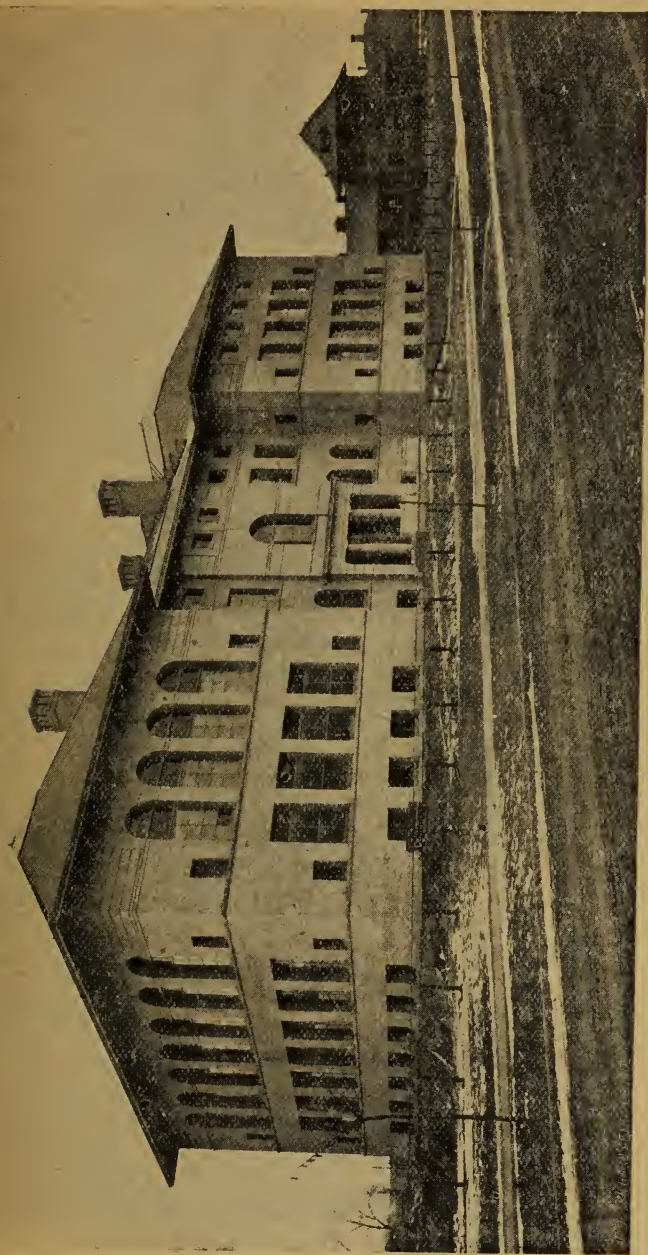
The University Bulletins are issued every six weeks during the University year, at least six numbers every calendar year. Entered at the Postoffice in Minneapolis as second-class matter.

MINNEAPOLIS, MINN.

The University Catalogs are published by authority of the Board of Regents, as a regular series of bulletins. The number issued each year varies from ten to twelve. Bulletins will be sent gratuitously, postage paid, to all persons who apply for them. In calling for bulletins, please state department of the University concerning which you desire information. The full catalogue will be sent only upon receipt of ten cents to pay postage. Address,

THE REGISTRAR,

The University of Minnesota,
Minneapolis, Minn.



LABORATORY OF MEDICAL SCIENCES. — In the south wing of which the College of Pharmacy is housed.

The University

THE UNIVERSITY OF MINNESOTA comprises the following named colleges, schools and departments:

THE GRADUATE DEPARTMENT

THE COLLEGE OF SCIENCE, LITERATURE AND THE ARTS

THE SCHOOL OF ANALYTICAL AND APPLIED CHEMISTRY

THE COLLEGE OF ENGINEERING AND THE MECHANIC ARTS

THE SCHOOL OF MINES

THE DEPARTMENT OF AGRICULTURE, including—

the College of Agriculture

the School of Agriculture

the Dairy School

the Short Course for Farmers

THE COLLEGE OF LAW

THE DEPARTMENT OF MEDICINE, including—

the College of Medicine and Surgery

the College of Homeopathic Medicine and Surgery

the College of Dentistry

the College of Pharmacy

The Regents of the University have also entrusted to their charge

THE EXPERIMENT STATION, including—

the Main Station at St. Anthony Park

the Sub-Station at Crookston

the Sub-Station at Grand Rapids

THE GEOLOGICAL AND NATURAL HISTORY SURVEY

THE GRADUATE DEPARTMENT. In each of the colleges, except those of medicine and dentistry, there are advanced courses of study leading to second degrees. These courses are open to graduates of any reputable college upon presentation of diploma.

In the COLLEGE OF SCIENCE, LITERATURE AND THE ARTS, there is a four-years course of study leading to the degree, bachelor of arts. The work of the first year is elective within certain limitations as to the range of subjects from which the electives may be chosen. The remaining work of the course is entirely elective, with the provision that a certain number of long courses be selected. The course is so elastic that it permits the student to make the general scope of the course, classical, scientific or literary, to suit the individual purpose.

THE SCHOOL OF ANALYTICAL AND APPLIED CHEMISTRY, leading to the degrees analytical chemist or chemical technologist offers two courses of study of four years each in analytical and applied chemistry.

A Summer School for Teachers. A six-weeks' course of instruction is offered, in various University subjects, for those whose school duties prevent them from taking the regular University courses

THE COLLEGE OF ENGINEERING AND THE MECHANIC ARTS offers courses of study, of four years each, in civil, mechanical, electrical and municipal engineering leading to the degrees of civil, mechanical, electrical and municipal engineer. This college offers a four-years course of study in science and technology leading to the degree of bachelor of science, with an additional year leading to the engineer's degree in any one of the various lines offered in the college. This college also offers graduate work leading to the degree master of science.

THE SCHOOL OF MINES offers a four-years course of study in mining and metallurgy upon completion of which the degrees, engineer of mines and metallurgical engineer, are conferred.

THE COLLEGE OF AGRICULTURE offers a four-years course in agriculture. The degree of bachelor of science in agriculture is conferred on completion of the course. Students in this college may specialize along the line of forestry or home economics and secure the degree bachelor of science (in forestry or in home economics).

THE SCHOOL OF AGRICULTURE offers a three-years course of study and is a training school for practical farm life and in domestic economy. The college of agriculture is open to graduates of this school who have completed the fourth year of work required for admission to the college.

The Dairy School offers practical instruction in dairying to those who are actually engaged in the manufacture of butter and cheese.

The Short Course for Farmers is designed to be of the greatest help possible to those actually engaged in farming.

THE COLLEGE OF LAW offers a three-years course of instruction leading to the degree of bachelor of laws. Graduate work leading to the degrees, master of laws, and doctor of civil law is offered. There is an evening class provided in this college.

THE COLLEGE OF MEDICINE AND SURGERY and THE COLLEGE OF HOMEOPATHIC MEDICINE AND SURGERY offer four-year courses of study of nine months each. Upon completion of either of the prescribed courses the degree, doctor of medicine is conferred.

In the colleges of science, literature and the arts, of medicine and surgery, and homeopathic medicine and surgery, there has been established a combined course of six years leading to the degrees of bachelor of science and doctor of medicine.

THE COLLEGE OF DENTISTRY offers a three-years course of study of nine months each. Upon completion of the prescribed course the degree of doctor of dental surgery is conferred.

THE COLLEGE OF PHARMACY offers a two- or three-years course of study leading to the degree of pharmaceutical chemist. This college also offers graduate work leading to the degrees, master of pharmacy and doctor of pharmacy.

SPECIAL COURSES. In each of the colleges, students of an advanced age and adequate preparation are permitted to pursue, under the direction of the faculty, one or two distinct lines of study.

The University offers no correspondence courses.

The Board of Regents

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The President of the University

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The HON. GREENLEAF CLARK, LL. D., Died, Dec. 7, 1904

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ERNEST B. PIERCE, B. A., *Assistant Registrar*

B. F. CARTER, *Accountant and Purchasing Agent*

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pathic Medicine and Surgery*

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HENRY F. NACHTRIEB, B. A., *Curator of the Zoological Museum*

ALLEN W. GUILD, *Superintendent of Buildings*

EDWIN A. CUZNER, *Superintendent of Grounds*

College of Pharmacy Calendar

1905-6.

September	5.	Registration begins.
September	11.	Entrance examinations and registration completed. Classification of students.
September	12.	Classes called for regular work.
November	30.	Thanksgiving day. Holiday.
December	23.	Holiday recess begins. (No classes.)
December	25.	Christmas day.
January	8.	Work resumed.
January	22.	First semester examinations begin.
January	26.	First semester examinations end.
January	29.	Second semester begins.
February	12.	Lincoln's birthday. Holiday.
February	22.	Washington's birthday. Holiday.
May	25.	Second semester ends.
May	28.	Second semester and final examinations begin.

COMMENCEMENT WEEK.

SUNDAY,	June 3.	Baccalaureate service.
MONDAY,	June 4.	Senior class exercises.
TUESDAY,	June 5.	Senior promenade.
WEDNESDAY,	June 6.	Alumni day. Meeting at 3 p. m. at college.
THURSDAY,	June 7.	Commencement day—the thirty-third annual commencement.
FRIDAY,	June 8.	Summer vacation begins.

1906

JULY						
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Equipment

GROUNDS AND BUILDINGS.

The University campus comprises about forty-five acres lying between University avenue and the river and between Eleventh and Nineteenth avenues Southeast. The campus is well wooded with a fine growth of native oaks and commands a beautiful view of St. Anthony Falls and the city, but are sufficiently removed from the business center of the city to insure desirable quiet and retirement. The buildings upon the campus number twenty, and are valued at over \$800,000. A special clinical building for the use of the department of medicine is located in the southern part of the city, where there is an abundance of clinical material, and within easy reach of the University. The campus is valued at about \$450,000 and the equipment of the buildings at about \$300,000.

The State Experimental Farm, upon which are located the buildings of the experiment station and the department of agriculture, consist of over two hundred and fifty acres of very valuable land half way between the twin cities and within a thirty-minutes' ride of either city. The farm is valued at \$400,000, and the sub-stations located at Crookston and Grand Rapids, at \$30,000 more. The buildings and equipment of the department of agriculture are valued at over \$400,000.

LIBRARIES.

The following libraries are easily accessible to the University students:

Minneapolis—The University Libraries, 110,000 volumes; the Public Library, 125,000 volumes; the Minneapolis Bar Association, the Guaranty Loan Law, and the New York Life Insurance Law Libraries, numbering a total of about 30,000 volumes, are open under certain restrictions to law students; the Minnesota Academy of Natural Sciences, 7,000 titles.

St. Paul—The State Historical Library, 70,000 volumes; the State Library, 35,000 volumes; Public Library, 55,000 volumes.

The University Library consists of:

1. The General Library.

2. College Libraries, including Law, Medicine, Engineering, Agriculture.

3. Departmental Libraries, including Art, Astronomy, Biology, Botany, Chemistry, French, Geology, German, Greek and Latin, History, Military Science, Pedagogy, Physics, Rhetoric, Scandinavian.

The private collections of professors are available when necessary for research.

The whole number of bound volumes owned by the University is about 115,000. Unbound books and pamphlets, about 30,000. About 500 current periodicals are received in the general and other libraries.

The departmental libraries consist mainly of books of reference and current periodicals relating to technical subjects.

The general library is open to students and the public from 8:00 a. m. to 9:30 p. m., every day of the University year, except Sundays and legal holidays.

The Law Library contains nearly all the English Reports, including those of Canada, from the earliest decisions down to the year 1900; nearly all the reports of the different states of the Union; all the reports of the United States Supreme Court, and all the Federal Court reports. It contains also the digests of these reports and an excellent selection of standard textbooks and law dictionaries.

The Nelson Law Library is a rare collection of fifteen hundred volumes, donated to the University by the Honorable R. R. Nelson, of St. Paul, upon retirement from the Federal bench. It contains many old English reports, in addition to those already mentioned, and many ancient treatises upon common law.

A rare and unique addition to the Law Library has been secured by the donation of Judge Collins and former Attorney-General Childs turning over to the University all the Briefs and Paper-Books in the causes argued in the Supreme Court of Minnesota since 1888, making a fine collection of over five hundred bound volumes.

The Medical Library contains a large and well assorted collection of books, sets of journals, bound and unbound pamphlets, relating to all branches of medicine. All of the leading

medical journals are on file in the reading room. The various laboratories have also reference libraries devoted to their special lines of work.

The library was greatly enriched by the bequest of the late Dean, Perry H. Millard, M. D., who bequeathed his entire private medical library to the department. This collection consists of several hundred volumes and pamphlets, including many rare and old medical works, sets of journals especially rich in surgical works.

To all these library facilities may be added the Minneapolis Public Library, which is within easy reach of the University and is opened freely to the students of the University. This library contains over one hundred twenty-five thousand bound volumes and over fourteen hundred of the leading newspapers, magazines and periodicals of the world.

MUSEUMS.

The museums of the University contain material obtained from various sources arranged with special reference to its use for illustration. Among the more notable collections are the following:

(a) **In Geology and Mineralogy:** The Kunz collection of minerals, purchased of George F. Kunz; several suites of crystalline rocks secured from various sources; the Ward collection of casts contributed in part by citizens of Minneapolis; collections of the rocks, fossils, minerals and economic products of Minnesota; upwards of 9,000 entries gathered by the geological survey of the State; the Sardeson collection of paleozoic fossils of Minnesota, Wisconsin, Iowa and neighboring states, comprising 4,500 entries and more than 30,000 specimens; a series of thin sections of typical rocks and minerals largely representing Minnesota localities; purchased material comprising a fine collection of crystals; 5,000 minerals and 3,000 specimens of economic minerals and crystalline rocks.

(b) **In Zoology:** All the material collected by the State Zoologist; a collection of mounted Minnesota birds representing about one-third of the species found in the State; a number of the mammals of the State and a few from the more western states; a collection of fishes, molluscan shells, corals and other foreign material.

The ornithological room contains the excellent Thomas S. Roberts and Franklin Benner collection of skins, nests and eggs of Minnesota birds. Other groups of animals are more or less

numerously represented, and are receiving annual additions from the Zoological Survey.

(c) **In Botany:** The general herbarium numbering about 250,000 specimens and comprising the series of plants collected by the State Botanist; an alcoholic collection of material for dissection; a collection of woods of Minnesota; a limited series of carboniferous and cretaceous fossil plants, including the Lesquereaux collection from the Minnesota River localities.

(d) **The Museum of Technology:** A cabinet of specimens illustrating the products and processes of applied chemistry is being collected by the professor of chemistry, as opportunity offers. The collection embraces fuel, ores, furnace products, textile materials, both raw and manufactured, dyewoods and other materials used in dyeing; specimens illustrating the bleaching and printing of cotton, linen and woolen goods, earthenware, pottery, etc.

(e) **The Classical Museum:** Some material illustrating classical geography, topography, chronology, mythology, archaeology, and art has been collected, consisting mainly of plans and charts, casts, pictorial illustrations, fac-similes of manuscripts and inscriptions.

(f) **In English:** A few fac-similes of manuscripts, plates that may serve for the purpose of archaeological instruction, publication of texts, reprints of blackletter books and of original editions, photographs and portraits have been gathered.

(g) **Civil Engineering:** The department is collecting samples of road material typical of the various localities of the State; leading materials used in street paving, such as granite, trap rock, brick and asphaltum. A set of standard sections of steel and wrought iron is provided for illustration in the study of structural design.

(h) **Mechanical Engineering:** The collection consists of models of mechanical motions especially relating to the work in kinematics; sectioned apparatus, such as injectors, water meters and steam separators; various collections of drop forgings in iron, steel and copper; miscellaneous samples of commercial work representing the product of special machines; groups of standard nuts, bolts and screws; samples of belting, ropes, steel and iron cables, rawhide gears, and other material especially useful for illustrative purposes.

(i) **Electrical Engineering Museum:** This museum contains a growing collection of samples furnished by various man-

ufacturers and dealers for demonstrating the merits of different products and for illustrating modern practice; an excellent collection showing the development of electrical instruments, lightning arresters, switches, primary and secondary batteries, early forms of dynamos and motors, lighting apparatus and various industrial applications of electricity; also a collection of samples from repair shops and elsewhere, illustrating the effects of wear, accidents and abuse.

ASTRONOMICAL OBSERVATORY.

The students' astronomical observatory contains a ten and one-half inch combined, visual, photographic and spectroscopic refracting telescope, constructed by Warner Swasey and Brashear; a photographic measuring machine by Repsold; a spectrometer by Brashear; a three inch transit circle and chronograph by Fauth; a Howard astronomical clock.

GYMNASIUM.

The gymnasium is located in the Armory, and is well equipped with a variety of gymnastic appliances. The object of the gymnasium is to provide all of the students of the University opportunity for exercise to build up their general health. It also provides special training to correct physical defects and functional derangements. The gymnasium is in charge of a professional medical director and assistant and the training is under their direct supervision. A thorough physical examination is offered each student immediately before and after the gymnasium course, a record is made of the same. The examination of these records shows a marked improvement in the standard of health of the average student during his college course. The gymnasium is open at all times to all young men in the University who are free to use the apparatus and to pursue a course of physical training under the direct supervision of the director and his assistant. In some of the colleges of the University, this work is required of all men.

General Information.

THE UNIVERSITY YEAR.

The University year covers a period of thirty-eight weeks beginning on the Tuesday before the first Thursday in September. Commencement day being always the first Thursday in June.

THE ONE MILE LIQUOR LAW.

A state law provides that "it shall be unlawful for any person to sell or dispose of any spirituous, vinous, or malt liquors within the distance of one mile of the main building of the University of Minnesota, as now located in the city of Minneapolis; provided, that the provisions of this section shall not apply to that part of the city of Minneapolis lying on the west side of the Mississippi River."

STUDENTS' SOCIETIES.

RELIGIOUS.

The Students' Christian Association was organized in 1869; its object being to promote growth in Christian character, and to engage in such religious work as may be deemed expedient and necessary.

The Association owns a commodious building, which serves as the headquarters for student religious activity. All persons in sympathy with the object of the association are eligible to membership.

The Young Men's Christian Association has as its object the promotion of "growth in grace and Christian fellowship among its members and aggressive Christian work, by and for students." This associations leases the Students' Christian Association building and keeps it constantly open, with a general secretary in charge. All men in sympathy with the object of the association are eligible to membership. This building is maintained as the social and religious headquarters of all young men in the University.

This Association also provides an employment bureau whose services are free to students in all departments of the institution, as well as a committee to help students to find comfortable rooms and boarding places. The Association also maintains an educational department in which students may make up their entrance conditions without any charge for instruction.

The general secretary will be pleased to correspond with any young man intending to come to the University. Address the General Secretary of the Young Men's Christian Association, University of Minnesota, Minneapolis, Minn.

The Young Women's Christian Association is the center of Christian life among the young women of the University. Its object is "To deepen spiritual thought in the University woman, to environ her with a semblance of home, to bring to her friendship, assistance and sociability by stimulating student fellowship, to give her personal help when necessary; thus developing in her the Christ ideal of culture in womanhood."

To this end frequent socials and informal teas are given throughout the year; twice each week twenty minute prayer meetings are held, a dozen circles meet one hour a week for devotional Bible study; and from time to time missionary meetings are held. The general secretary devotes all of her time to the association and will be pleased to correspond with any young woman who wishes information regarding the University.

All young women are invited to visit the Young Women's Christian Association room before registering. A group of upper classmen will be there during the opening days to give advice and assistance.

THE UNIVERSITY CATHOLIC ASSOCIATION.

The University Catholic Association was organized by the Catholic students in the spring of 1900. The purpose of the association is the study of the Bible and of the doctrines and history of the Catholic church. Membership is open to any one connected with the University. Regular meetings are held every Sunday afternoon in the rooms of either the Young Men's or of the Young Women's Christian Association, through the courtesy of those organizations. The association is planning to erect a building on or near the campus at an early date.

Aside from the religious objects, the association tends to promote good fellowship among its members. Early in each University year a reception is tendered to new students and during the year two or more socials are held.

Further information may be obtained by addressing the secretary of the association at the University.

LITERARY, SCIENTIFIC AND PHILOSOPHICAL.

Literary Societies—The literary societies are mainly debating clubs. Every student is welcome to attend the literary sessions, but the business sessions are usually held behind closed doors. Students desiring to join should make early application to some member of the society he prefers, as the membership is limited.

The Minnesota Literary Union—Is a federation of the members of the following societies: Shakopean, Forum, Castalian, Minerva, Hermean and Arena. Four meetings are held each year.

Shakopean—Membership limit, 35; men: **Forum**—Membership limit, 30; men: **Minerva**—Membership limit, 30; women: **Law Literary**—Unlimited; law students: **Castalian**—Membership limit, 35; men: **Kent**—Membership limit, 30; law students: **Theta Epsilon**—Membership limit, 30; women: **Thalian**—Membership limit, 25; women: **Arena**—Membership limit, 30; men: **Society for Legal Culture**—Membership limit, 30; men.

The Philological Society—The object of the philological society is to promote philological investigation and study.

Greek Club—Is a society organized by professors, students and alumni of the department of Greek for the study of Greek life, language and customs.

Societas Latina is a society in the department of Latin, having for its special aim the securing of greater proficiency in reading and writing Latin.

The Graduate Club is a club organized for the purpose of fostering a greater interest in graduate work, for mutual help, and for the discussion of topics under investigation.

The Dramatic Club is organized for the study and practice of dramatic art. One or more plays are put on the stage each year.

The Society of Engineers meets once in two weeks to listen to addresses by prominent engineers and for the discussion of various engineering topics.

The Geological Club is an organization of instructors and students interested in geology, for the discussion of geological problems.

The Scandinavian Literary Club is an organization whose purpose is to promote interest in the study of Scandinavian literatures.

The Federated Debating Board has charge of home and inter-collegiate oratorical contests.

The Economic Club meets twice a month for debate in economic and political subjects.

The Mining Society is an organization of mining engineering students who meet for the purpose of hearing lectures and discussing mining engineering problems.

The Camera Club is an organization of instructors and students interested in photography and photographic chemistry.

The Botanical Students' Journal Club is an organization of juniors, seniors and graduate students, of the department of botany, for the review of current botanical literature.

The Pharmaceutical Students' Journal Club composed of undergraduate and graduate students of the College of Pharmacy, meets semi-monthly for the discussion of current pharmaceutical literature.

The University Liberal Association is an organization of students and faculty members formed for the discussion of topics of broad and current interest. It meets twice a month, usually on Saturday evening.

The Zoological Reading Club is for instructors and graduate students. Its purpose is the reading and discussion of philosophical works on Zoology.

The Physical Colloquium is composed of instructors and graduate students and meets for the discussion of recent investigations in physical science.

The Glee and Mandolin Clubs give a public concert each year at the University and make a tour of the state during the holidays.

The University Band is organized as a part of the military system of the University and furnishes music for many University affairs.

Women's League is an organization of the women of the University for mutual helpfulness and sociability. The league is planning to erect a woman's building upon the campus and have already raised considerable money for this purpose.

The Northern Oratorical League is composed of the orator-

ical associations of the University of Michigan, Northwestern University, the University of Wisconsin, Oberlin College, the State University of Iowa, the University of Chicago, and the University of Minnesota. Its purpose is to foster an interest in public speaking and to elevate the standard of oratory by holding annual contests. The contests are open only to undergraduates.

The Central Debating League is composed of the debating associations of the University of Michigan, the University of Minnesota, Northwestern University, and the University of Chicago. Its purpose is to discuss in public leading questions of the day and in this way to develop ready and forceful speakers.

The four universities are arranged in two groups for the semi-final debates, which are held the second Tuesday in January. On the first Friday in April in each year, the winners from the groups meet in a final debate in the city of Chicago.

The University has been admitted to compete for the **Hamilton Club** competition. Michigan, Minnesota, Wisconsin, Iowa, Ohio, Indiana, Northwestern and Chicago Universities constitute the league. Each of the colleges named submits one oration upon Alexander Hamilton or some character or event connected with his time. From the orations submitted four are chosen to be delivered before the Hamilton Club.

ATHLETICS.

The Athletic Association is an organization having for its object the general physical well-being of the students and the encouragement of a proper spirit in favor of hearty, manly sports.

Control of Athletics. The athletic sports of the University are under the supervision of a Board of Control made up of eleven members; two are members of the faculty, two are alumni and seven are students. This board has general supervision of all matters connected with athletic contests: they pass upon the eligibility of players, investigate charges of misconduct and arrange the schedule of games. It is the purpose of this board to foster a spirit in favor of fairness and honesty in all athletic contests.

Northrop Field is an enclosed athletic field containing about six acres, immediately adjoining the armory. It is surrounded by a high brick wall and is one of the finest athletic fields in the country.

SCHOLARSHIPS.

It is the policy of the University to establish scholarships in the different departments, where extra help is needed for instruction, under regulations somewhat as follows:

1. The appointments are made by the executive committee of the Board of Regents, upon the recommendation of the department in which the appointment is desired, after approval by the general faculty.

2. Recipients of scholarships may be either graduate or undergraduate students.

3. The scholarships are not intended as gifts or benefactions from the state to the recipients, but as provisions under which services may be rendered the University.

4. It is understood that these services are of a nature which shall assist the holder of a scholarship to attain the mastery of some line of work in the department to which he is appointed.

PRIZES.

THE PILLSBURY PRIZE.

Three prizes of \$100, \$50 and \$25, offered by the heirs of the Hon. John S. Pillsbury, are awarded for the best work in the rhetorical department, as evidenced finally by an oration in public.

THE '89 MEMORIAL PRIZE IN HISTORY.

The class of 1889, at graduation, established a prize of \$25 each year, to be known as the '89 Memorial Prize, and to be given for the best thesis in history. The award is made by a professor of history in some other institution.

THE MOSES MARSTON SCHOLARSHIP IN ENGLISH.

Friends and pupils of the late Professor Marston, Ph. D., have given and pledged one thousand dollars as a memorial fund. The annual income of the fund is to be used to help some student in the long English course. The award of the income is made on the basis of pecuniary need and of deserving scholarship.

THE ALBERT HOWARD SCHOLARSHIP FUND.*

Under the last will and testament of Mr. James T. Howard of the town of St. Johnsbury, Vermont, \$4,166.81 was left to

the University to establish a scholarship to be known as the "Albert Howard Scholarship." This scholarship is assigned by the executive committee upon the recommendation of the general faculty.

THE SCHURMEIER PRIZE.

Hon. Theodore L. Schurmeier, of St. Paul, offers through the department of Sociology, a prize of twenty dollars for the best essay presented by an undergraduate student on the subject of "The Social Forces in the Making of Emerson."

THE WILLIAM JENNINGS BRYAN PRIZE.

The Hon. William Jennings Bryan has given the University the sum of \$250.00 for the encouragement of studies in political science. The annual income will be given as a prize to the writer of the best essay upon a topic to be announced each year. The competition is open to all students of the college of science, literature and the arts.

THE BRIGGS' PRIZE IN FOUNDRY PRACTICE.

For the encouragement of studies in foundry practice, Mr. O. P. Briggs, commissioner of the National Foundrymen's Association, Detroit, Mich., offers \$75 annually, in two prizes, which are to be accompanied by gold medals. The competition is open to sophomores in the college of engineering, and the prize will be awarded for the best essay relative to the above subject. No prize will be awarded if less than five essays are submitted in competition.

THE DUNWOODY PRIZE.

Mr. William H. Dunwoody, president of the St. Anthony and Dakota Elevator Company, has provided a cash prize of \$75 for the members of the team winning the inter-sophomore debate, and another prize of \$25 for the student in the sophomore class writing and delivering the best oration.

THE LOWDEN PRIZE.

Mr. Frank O. Lowden, of Chicago, offers as a prize to be competed for by the Northern Oratorical League, an endowment of \$3,000, which will yield an annual income of about \$175. A prize of \$100 will be given to the winner of the first place, \$50 to the orator who gets second place, and the remainder will be set aside each year for an interest fund to accumulate, and, in time, produce another endowment.

THE PEAVEY PRIZE.

Mrs. Heffelfinger continues the prize of \$100, established by her father, the late Frank H. Peavey. This prize consists of \$75 for the members of the team winning the freshman-sophomore debate, and another prize of \$25 to the student in the freshman or sophomore class writing and delivering the best oration.

SPECIAL PRIZES IN ORATORY AND DEBATE.

The Department of Rhetoric has been enabled to offer, through the generosity of friends of the University, numerous cash prizes, amounting in all to three hundred and eighty-five dollars. This in addition to the regular annual prizes offered for special excellence of work in that department. The names of the donors and the amounts contributed by each, follow: George H. Partridge, '79, \$100; Charles S. Pillsbury, '00, \$75; John S. Pillsbury, '00, \$75; Edward Backus, \$40; C. A. Smith, \$25; The H. W. Wilson Company, \$25; Fred Snyder, '81, \$10; D. P. Jones, '83, \$10; Asa Payne, \$10; H. B. Avery, '93, \$5; Russell Spicer, '97, \$5; Christopher Graham, '87, \$5.

THE WYMAN PRIZE.

A prize of twenty-five dollars is offered by the Honorable James T. Wyman, of Minneapolis, through the department of political science, for the best essay of three to five thousand words by an undergraduate student, on the subject of "The Labor Question in Farming Communities."

THE ELLIOT SCHOLARSHIP LOAN FUND.

To fulfill the wish of the late Dr. A. F. Elliot to aid young men who find their efforts to obtain a practical education embarrassed through lack of means, the income of \$5,000, amounting to \$250 per year, is placed in the hands of the Board of Regents to be used as a scholarship loan fund for assisting young men in the school of mines.

The conditions of granting the scholarship loans are: The financial needs of the applicant, his scholarship, moral character, enthusiasm shown in his work and promise of usefulness in his profession. When money is available it may be loaned to pay expenses of worthy students during sickness. The loans

are to be repaid, without interest, at the earliest convenience of the recipients.

THE GILFILLAN TRUST FUND.

The Honorable John B. Gilfillan has given to the University the sum of fifty thousand dollars, yielding an annual income of twenty-five hundred dollars, to be used by the Board of Regents to assist worthy students, needing such aid, to secure an education. The Regents are empowered to give this aid in the way of loans or gifts, according to the circumstances of the case. As a rule the fund is used as a loan fund, and a small rate of interest is charged. The details of the regulations which have been adopted by the Regents for the administration of the fund may be learned by addressing the President of the University.

PUBLICATIONS.

The University Bulletins are published by authority of the board of Regents twelve times a year—every four weeks during the University year. Bulletins will be sent gratuitously, postage paid, to all persons who apply for them.

The Minnesota Alumni Weekly is published every Monday during the University year. The Weekly is published entirely in the interest of the alumni and is devoted to alumni news and such University news as may be of special interest to the alumni.

The Minnesota Daily is published five times each week during the University year by an organization of University students.

The Junior Annual, called the "Gopher," is a book published annually by the junior class of the University.

The Minnesota Magazine is a monthly magazine devoted to the cultivation of literary taste and effort among the students of the University. It is managed by a board of editors chosen from the senior class.

The Year Book of the Society of Engineers. The book is published yearly by the students of the engineers' society. It is devoted to the publication of articles upon engineering subjects by professors and students in the college of engineering and the mechanic arts.

EXPENSES OF YOUNG MEN.

At the request of University officials, in past years, a considerable number of students have kept strict accounts of their expenses, and the following statement shows fairly the possibilities as to expenses for a year's work at the University.

Class and society dues.....	\$ 6.00	\$ 8.25	
Room rent (9 months).....	36.25		
Board (39 weeks).....	85.05	208.75	\$ 175.00
Laundry	9.95		
Books and stationery.....	13.95	32.51	30.00
Street car fare	3.80	4.95	
Clothing	20.80	74.25	50.00
Benevolence, including amusements	17.35	24.90	
Railroad fare		16.25	30.00
Miscellaneous	24.35	27.23	
Total expenses	\$ 217.50	\$ 397.09	\$ 285.00
Saved during summer.....	\$ 35.00		
Earned during the year....	237.75	272.09	265.00
	272.75		
Expenses	217.50		
Balance, over expenses.....	\$ 55.25		
Balance		\$ 125.00	\$ 20.00

This table does not represent the fees to be paid by students, and students who are planning to attend the University should take that into account.

The students represented in the above statements are fairly representative; they were neither extravagant nor did they deny themselves unduly to get along.

The student who learns some trade before coming to the University has a great advantage over the student who has to earn his money by ordinary manual labor. Students have earned their whole expenses while attending the University, and have made good records at the same time. Other students have done so much work that they have not been able to keep up their studies, and have thus missed the one thing for which they were attending the University.

If it is possible for the student to have a part of his expenses paid, he should not attempt to earn his way entirely by his own exertions. It is a comparatively easy thing for a young man to earn half his living while attending the University and yet do good work in his classes. Students who want work seldom fail to find it. In coming to the University, the student should bring enough money with him so that he can

live comfortably for a few weeks until he can find something to do.

EXPENSES OF YOUNG WOMEN.

Rent	}	\$ 75.21	{	\$ 40.75	\$ 58.00
Board, light, laundry					
Fuel	}	9.32	{	52.42	138.00
Railroad fare and cartage.....					
Street car fare.....	}	2.16	{	7.25	30.22
Stationery					
Amusements and membership dues		7.50		27.80	6.00
Personals and clothing.....		32.63		5.85	8.97
Books, fees and incidentals.....		23.26		10.56	20.19
				72.51	67.59
				18.94	35.60
Totals		\$ 150.08		\$ 240.05	\$ 355.60

A pamphlet has been published containing five papers (one by a young woman), relating actual experience of students who have made their way through the University.

Students who contemplate making their way through college will find here stated the stern and unpleasant side, as well as the brighter side of such a life. A copy will be sent free to any address upon application.

The Department of Medicine

The Department of Medicine includes the following named colleges:

The College of Medicine and Surgery.

The College of Homeopathic Medicine and Surgery.

The College of Dentistry.

The College of Pharmacy.

Each college is distinct in the government of its internal affairs, has its own faculty and an independent curriculum, save in the studies of anatomy, physiology, chemistry, histology and embryology. These studies, so far as they are required in the various courses, are pursued by all students of the department in common.

BUILDINGS AND EQUIPMENT.

The department is resident in four buildings situated upon the University campus, viz: Medical hall, the laboratory of medical science, the laboratory of chemistry and the laboratory of anatomy.

Medical hall contains the offices of the deans of the college of medicine and surgery, of the college of homeopathic medicine and surgery and of the college of dentistry; the large amphitheatre and lecture rooms of the several colleges, the library and reading room of the department, the laboratory of materia medica, the operating rooms and laboratories of dentistry and the dental infirmary.

The laboratory of medical sciences is a building especially designed for laboratory uses. One wing of the building is occupied by the college of pharmacy and the department of physiology. It contains the office and private laboratory of the dean of the college of pharmacy, the pharmaceutical and botanical laboratories, the laboratory of dispensing with preparation and stock rooms. The office of the secretary of the college of medicine and surgery, a large lecture amphitheatre,

especially arranged for demonstrative work, the laboratories of physiology, physiologic chemistry and practical dietetics, and operative surgery are also situated in this wing.

The center and opposite wing are occupied by the departments of histology and embryology, pathology and bacteriology. Each of these branches has its well-lighted laboratories, preparation rooms and private study rooms.

Upon the basement floor are laboratory stock rooms and the animal rooms devoted to physiologic and bacteriologic purposes.

A large laboratory upon the first floor is assigned to the bacteriological work of the State Board of Health.

The laboratory of chemistry is a one-story brick building devoted entirely to the use of this department. It is equipped with amphitheatre, laboratories, preparation rooms, store rooms, and private offices of the professor and assistant professor of chemistry.

The laboratory of anatomy is a new two-story and basement building, 35x60 feet. In the basement are the morgue, injecting room, cold storage vaults, and engine and apparatus for the carbon dioxide freezing plant. On the first floor are an amphitheatre seating one hundred and seventy-five students, the private offices of the professors and instructors, a private dissecting room and a small laboratory for research work. The entire second floor is devoted to laboratories for practical work in anatomy.

The legislature has provided for the erection of a new building for the laboratories of bacteriology and pathology, which will be built within the next year. The retirement of these laboratories from the present medical science building will leave enlarged room for the accommodation of the remaining chairs.

The University Clinical Building is situated in a part of the city most favorable to the development of an out-door service and, at the same time, accessible to the students. It is of two stories and covers 40x150 feet. It affords ample floor space for amphitheatres, waiting rooms, dispensary and class rooms for each of the clinical branches. Wards and laboratories, in which section work in medical and surgical diagnosis can be conducted, have been equipped.

The department of medicine is in intimate relationship, through its several faculties, with the hospitals, infirmaries and

dispensaries of the cities of Minneapolis and St. Paul. Through these agencies it utilizes, for the benefit of its students, the clinical material of these two large centers of population. The location of the University near the interurban car line enhances the value and convenience of these clinical opportunities.

A medical library, containing over three thousand volumes and supplied with current periodicals, is open to all the students of the department. The collection has been chosen with special regard to the need for reference work and collateral reading. The general library of the University and the public and medical libraries of Minneapolis and St. Paul are also open to the students of this department.

The College of Pharmacy.

THE FACULTY.

CYRUS NORTHROP, LL. D., *President.*

FREDERICK JOHN WULLING, Ph. G., Phm. D., LL.M., etc., *Dean: Professor of Pharmacology, Pharmaceutical Chemistry and Pharmaceutical Jurisprudence.*

HENRY MARTYN BRACKEN, M. D., *Professor of Materia Medica.*

.....*Professor of Pharmacognosy.*

H. C. CAREL, B. S., *Professor of Chemistry; General, Medical, Analytical, Quantitative and Organic, Toxicology and Hygiene.*

CONWAY MACMILLAN, M. A., *Professor of Botany.*

FREDERICK K. BUTTERS, M. S., *Instructor in Botany and Practical Pharmacognosy.*

FRANK FAIRCHILD WESBROOK, M. A., M. D., C. M., *Professor of Bacteriology.*

GEORGE B. FRANKFORTER, M. A., Ph. D., *Professor of Organic Chemistry (Post-Graduate).*

GEORGE DOUGLAS HEAD, B. S., M. D., *Instructor in Clinical Microscopy.*

RICHARD OLDING BEARD, M. D., *Professor of Physiology.*

M. RUSSELL WILCOX, M. D., *Demonstrator in Physiology.*

G. D. HAGGARD, M. D., *Assistant in Physiology.*

.....*Instructor in Medical and Pharmaceutical Latin.*

ARTHUR L. PARSONS, B. A., *Instructor in Mineralogy.*

GUSTAV BACHMAN, Phm. D., *Instructor in Pharmacy and Laboratory Assistant.*

I. DERBY, B. S., *Assistant Professor of Chemistry.*

W. H. CONDIT, M. D., *Instructor in Materia Medica.*

C. N. MCCLOUD, Phm. D., M. D., *Lecturer on First Aids to the Injured.*

A. E. CARR, D. M. D., *Assistant in Pharmaceutical Chemistry.*

E. A. LOOMIS, B. S., *Assistant in Pharmaceutical Chemistry.*

ANNOUNCEMENT.

In the organization of this college the Board of Regents has aimed to secure the co-operation of the pharmacists of the state. The character of instruction is of high order and every effort is made to comply with the demands of the profession in the Northwest, or elsewhere, in the maintenance of a course of instruction of the highest grade. The college is located on the University campus, in the Medical Science Laboratory Building, and is one of the colleges of the department of medicine, but is distinct in the government of its affairs. The building and laboratories are on a par with the best, and their equipment is complete.

The work of the college, as outlined in the following pages, is conducted by means of lectures, recitations and laboratory exercises. Students find their time fully occupied. Those who feel unable to complete the work in two years may divide it in a manner to complete it in three years. Practising pharmacists who desire to take certain branches of study may avail themselves of any of the college facilities, but their studies and time will be subject to regulation as special students.

Courses of Instruction

- First Year.* History of pharmacy; metrology; physics of pharmacy, pharmaceutical processes; pharmacopœial preparations; mathematics of pharmacy; pharmacy quiz; identification; chemical philosophy; pharmaceutical chemistry of the non-metals and their preparations; the chemistry of the elements with special reference to organic materia medica; pharmacopœial inorganic salts and their official preparations; qualitative analysis; identification of salts; comparative morphology of the cryptogams; morphology and anatomy of the higher seed plants; microbotany; materia medica, organic and inorganic; physiology and anatomy.
- Second Year.* Carbon compounds; toxicological chemistry; uranalysis; chemistry of hygiene; classification of organic compounds; U. S. P. organic compounds and their preparation; U. S. P. testing; quantitative analysis; manufacture of official salts; national formulary; incompatibility; dispensing; pharmaceutical assay; synthetic remedies; homeopathic pharmacy; identification of salts; pharmacognosy; powdered drugs; therapeutics; mineralogy and crystallography; bacteriology (optional); clinical microscopy; pharmaceutical jurisprudence; Minnesota pharmacy law; first aids to the injured.
- Third Year.* Students taking three years to do the work of the regular two-year course, will divide the work in an equitable way subject to the approval of the Dean. Students are urged to devote three years to the completion of the course.

PHARMACY.

- I. History of Pharmacy,* including Pharmacopœias, Dispensatories, text-books, works of reference. History of the U. S. Pharmacopœia through all its revisions.
Six introductory lectures and two recitations, first semester, first year.
PROFESSOR WULLING.
- II. Metrology.* Weights and measures, including metric system; balances—construction, varieties, methods of weighing; specific gravity in detail; specific volume, alligation, etc.
Lectures, recitations and laboratory work, first semester, first year.
PROFESSOR WULLING, MR. BACHMAN AND ASSISTANT.
- III. The Physics of Pharmacy.* Students are required to have had elementary physics before entering. This course covers a review and more extended elucidation of such divisions of physics as apply to pharmaceutical processes. Special attention is paid to heat.
Specific heat; thermometers—the various scales, testing and comparing thermometers; combustion of solids, liquids and gases in various kinds of furnaces, stoves and burners; application of heat in drying ovens, steam, hot-air and water ovens; drying closets, desiccators, blow-pipes, crucibles; baths for controlling and equalizing heat; water—salt—oil—glycerine—paraffine—hot-air baths; evaporation—spontaneous, rapid, slow, in vacuo; ebullition—boiling points, fusion; sublimation, calcination, dehydration, torrefaction, roasting, reduction, oxidation, carbonization, deflagration, ignition, etc.
Solution—chemical, pharmaceutical, simple, chemical, saturated; circulatory displacement.
Dialysis—construction of dialyser, osmosis, endosmosis, exosmosis, crystalloids and colloids, etc.
Lectures, recitations and laboratory work, first semester, first year.
PROFESSOR WULLING, MR. BACHMAN AND ASSISTANT.
- IV. Pharmaceutical Processes.* The processes not taken up in III constitute the subjects of this course. In part they are: drug grinding and powdering; comminution; contusion; trituration; sifting; elutriation; levigation; lixiviation; filtration—filtering media, filtration of solutions, oils, syrups, rapid filtration, filtration in vacuo, hot filtration, colation; wash-

ing—displacement, continuous; decantation—the syphon and its uses; precipitation—methods, vessels, separating, drying, weighing; granulation—granular effervescent salts; desiccation; exsiccation; crystallization—water of crystallization deliquescence, efflorescence, methods of obtaining crystals, collecting, draining, washing, drying crystals, fractional, crystallization; distillation—stills, simple, fractional, destructive; extraction; maceration; expression; percolation—history, theories, percolators, exhaustion, re-percolation, continuous percolation, fractional percolation; clarification; decolorization.

Lectures and laboratory work, first semester, first year.

PROFESSOR WULLING, MR. BACHMAN AND ASSISTANT.

The work of I, II, III and IV aggregates: Lectures, 72 hours; recitations, 54 hours; laboratory work, 238 hours.

- V. *Pharmacopoeial Preparations.* This course includes the study and preparation of official bodies for which the U. S. P. gives formulæ and processes, and includes waters, solutions, syrups, mucilages, spirits, infusions, decoctions, tinctures, fluid extracts, vinegars, wines, liniments, oleates, ointments, cerates, resins, oleo-resins, honeys, glycerites, mixtures, emulsions, elixirs, collodions, pills, capsules, powders, suppositories, bougies, plasters, papers, cachets, etc.

Lectures, recitations and laboratory work, first semester, first year.

PROFESSOR WULLING, MR. BACHMAN AND ASSISTANT.

- VI. *National Formulary.* This course includes the study of the National Formulary and the making of one or more members of each class of preparations.

Lectures and laboratory work, second semester, second year.

PROFESSOR WULLING, MR. BACHMAN AND ASSISTANT.

- VII. *Homeopathic Pharmacy.* A brief exposition of the principles underlying homeopathic medication, with some laboratory work.

PROFESSOR WULLING, MR. BACHMAN AND ASSISTANT.

- VIII. *Incompatibility.* Therapeutic, pharmaceutical and chemical incompatibility is taken up in lecture and recitation work preliminary to IX.

Second semester, second year.

PROFESSOR WULLING.

- IX. *Dispensing.* The study of the prescription and practical work in dispensing upwards of one hundred typical prescriptions.

Lecture and laboratory work, second semester, second year.

PROFESSOR WULLING, MR. BACHMAN.

- X. *The Mathematics of Pharmacy.* While students are required to have a preparation in arithmetic and algebra before entering, they receive frequent drills at stated hours and as occasion requires or suggests throughout the entire course. Students are required to take a final examination in the subject at the end of the first year, at which examination they must attain a rating of at least eighty per cent.

- XI. *Pharmacy Quiz.* A thorough review of the work covered in II, III and IV. Two hours weekly, second half of first semester and second semester of first year.

MR. BACHMAN.

- XII. *Identification of Official Preparations.* The study of the physical properties of official preparations.

First and second year.

MR. BACHMAN.

THE CHEMISTRY OF PHARMACY.

- I. *Chemical Philosophy.* This course is preliminary to all other work in chemistry. It treats of the principles underlying the science, and endeavors to elucidate chemical facts and phenomena. The subject is divided into

Chemical Statics, embracing the study of the theories of atoms and molecules, atomic weights, atomic and molecular volume, quantivalence, molecular structure, ions, electric qualities, etc., and

Chemical Dynamics, the study of reactions and their equations, thermics, chemical properties in general, etc.

Two hours weekly, first semester, first year.

PROFESSOR WULLING.

- II. *The Pharmaceutical Chemistry of the Non-metals and their Preparations.*

Two hours weekly, second half of first semester of first year.

PROFESSOR WULLING.

- III. *The Chemistry of the Elements*, with especial reference to inorganic materia medica.
Lectures, recitations and laboratory work, eighteen hours weekly first half, second semester, first year.
PROFESSOR CAREL AND MR. DERBY.
ASSISTANTS: MR. CARR AND MR. LOOMIS.
- IV. *Pharmacopoeial Inorganic Salts and their Official Preparations*, with especial reference to their description, properties and manufacture.
Three hours weekly, second semester, first year.
PROFESSOR WULLING.
- V. *Qualitative Analysis*. Lectures and recitations and laboratory work in the qualitative determination of the metals and acids of pharmacy. This course follows and supplements course III.
Eighteen hours weekly, second half, second semester, first year.
PROFESSOR CAREL AND MR. DERBY.
ASSISTANTS: MR. CARR AND MR. LOOMIS.
- VI. *Chemistry of the Carbon Compounds*. A brief course dealing with those features of organic chemistry that are of especial medical and pharmaceutical interest, and which serve as an introduction to courses VII, VIII and IX.
Lectures and recitations and laboratory preparation of some important organic bodies used in medicine. First semester, second year.
PROFESSOR CAREL AND ASSISTANTS.
- VII. *Uranalysis*. Qualitative and quantitative.
Lectures, recitations and laboratory work, including the qualitative analysis of twenty specimens of normal and pathological urine, and the quantitative determination of sugar, albumen, chlorine, phosphates and urea and the standardization of reagents. First semester, second year.
PROFESSOR CAREL AND MR. DERBY.
ASSISTANTS: MR. CARR AND MR. LOOMIS.
- VIII. *Toxicological Chemistry*. Organic and inorganic. The chemistry of poisons and their antidotes and a study of symptoms, treatment and post-mortem appearances, including the simulation of symptoms of certain diseases, animal parasites, animal and vegetable products, etc.; the physiological action of important poisons and their antidotes; toxicological examination of blood, urine and various organs.
Lectures, recitations and laboratory work, first semester, second year.
PROFESSOR CAREL AND MR. DERBY.
ASSISTANTS: MR. CARR AND MR. LOOMIS.
- IX. *Chemistry of Hygiene*. The chemistry of the atmosphere, water, soil, etc.; the sanitary examination of air and water.
Lectures, recitations and laboratory work, first semester, second year.
PROFESSOR CAREL.
ASSISTANTS: MR. CARR AND MR. LOOMIS.
- The work of VI, VII, VIII and IX aggregates from eighteen to twenty-one hours weekly during the first semester of the second year.
- X. *Classification of Organic Compounds*. A continuation and amplification of the theoretical chemistry of the carbon compounds begun in VI, serving as a fuller preparation for XI.
Two hours weekly, second half first semester, second year.
PROFESSOR WULLING.
- XI. *Chemistry of the Pharmacopoeial Organic Compounds and their Preparations*. This course includes the critical study of cellulin and its derivatives, destructive distillation products, starches, sugars, fermentation products, organic acids, fixed oils and fats, volatile oils, waxes and animal fats, alkaloids, glucosides, animal drugs and products, etc.
Two to three hours weekly during the second semester of the second year.
PROFESSOR WULLING.
- XII. *Pharmacopoeial Testing*. A critical study of the identity, purity, limit and percentage tests of the Pharmacopoeia and their application either wholly or in part to practically every official organic and inorganic salt and compound.
Lectures, recitations and laboratory work, eight hours weekly, second semester, second year.
PROFESSOR WULLING, MR. BACHMAN AND ASSISTANT.
- XIII. *Quantitative Analysis of U. S. P. Salts and Preparations*. This course comprehends the study of the principles of quantitative determination, and includes the gravimetric, volumetric and gasometric determinations of the U. S. Pharmacopoeia, but not pharmaceutical assay work (xv).

Lectures, recitations and laboratory work. Fifteen hours weekly during the first ten weeks of second semester of second year.

PROFESSOR CAREL AND ASSISTANTS.

- XIV. *Manufacture of Official Organic and Inorganic Salts.* The preparation of from twenty to forty official salts as time permits.
Second semester, second year.

PROFESSOR WULLING AND MR. BACHMAN.

- XV. *Pharmaceutical Assay.* The quantitative determination of active constituents of a number of the potent organic drugs and preparations.
Second semester, second year.

PROFESSOR WULLING AND MR. BACHMAN.

- XVI. *Synthetic Remedies.* A study of the chemistry of synthetic remedies in medical use.
Second semester, second year.

PROFESSOR WULLING.

- XVII. *Identification of Salts.* The study of the physical identity of the more important official inorganic and organic salts.
One hour weekly during second semester of first year and entire second year.

MR. BACHMAN.

- XVIII. *Micro-Chemistry.* A brief course is provided for seniors if time permits.
Second semester, second year.

PROFESSOR WULLING.

- XIX. *Physiologic Chemistry and Microscopy* (Post Graduate). Laboratory work and demonstrations. A practical study of the several classes of proteids; of carbohydrates, fats, muscle and bone; of gastric juice, saliva, pancreatic juice and bile in their respective digestions; of glycogen, and of blood lymph, chyle and milk. Microscopic study of the carbohydrates in vegetable and animal forms; of the physiologic emulsions of fat; of the crystalline waste products, and of the physiologic conditions of the blood cells and of blood crystals. Practical instruction is given during this course in the enumeration of the blood cells, in the estimation of hæmoglobin and of the corpuscles in mass, in the spectroscopic examination of the blood in the determination of blood tests, and in the use of the polariscope.

Twelve hours a week, first half of first semester, second year.

PROFESSOR BEARD, DRs. M. R. WILCOX AND G. D. HAGGARD.

PHARMACEUTICAL BOTANY AND MICROSCOPY.

- I. *The Comparative Morphology of the Cryptogams.* The course embraces the comparative morphology of the cryptogams. Especial attention is paid to the green algæ, the foundation of the vegetable kingdom. The other groups of algæ and the fungi are briefly treated, particular stress being laid on their economic relations to other plants, to animals and to man. About one-half of the semester is devoted to the study of the archegoniate series of plants. Numerous examples of liverworts, mosses, ferns, and their allies are studied in the laboratory, and the line of development which leads from the algæ through the archegoniate series to the seed plants is emphasized.

First semester, first year.

MR. BUTTERS.

- II. *The Morphology and Anatomy of the Higher Seed Plants.* In this course especial attention is paid to vegetable histology. The characteristic plant tissues are examined, and their arrangement is noted in roots, stems, leaves, fruits and seeds. The formation and occurrence of carbohydrates, glucosides, alkaloids, organic acids, resins, gums, gum-resins and oleo-resins are carefully studied.

Second semester, first year.

MR. BUTTERS.

- III. *Micro-Botany.* Designed to furnish practical training in the use of the microscope, in the preparation of material for microscopic examination, including the use of micro-chemical reagents, and in the representation by drawings of all structures observed.

The work of this course is co-incident with that of II and III.

MR. BUTTERS.

These courses occupy the equivalent of six and one-half hours a week throughout the junior year. They aim to give a comprehensive and scientific view of the vegetable kingdom, to lay a broad foundation for the study of pharmacognosy, and throughout the course attention is frequently directed in the lectures to the wider relations of plants to one

another and to animals, and to the discussion of the plant as a living unit, thus bringing before the class the fundamental problems of plant physiology and ecology.

The successful completion of the course in botany is prerequisite to the study of pharmacognosy.

The work of the three courses covers sixty-six hours lectures, and one hundred forty-four hours laboratory work, and is carried out by Mr. Butters under the direction of Professor MacMillan.

MATERIA MEDICA.

I. *Inorganic Materia Medica.*

II. *Organic Materia Medica.*

The work in inorganic and organic materia medica is based principally on the U. S. P., but unofficial and synthetic drugs are also studied. The course includes the study of the general characteristics of drugs and of their physiological action. Pharmacodynamics, including the study of the identity and quality of drugs, shares attention in the course of pharmacognosy.

Five hours weekly, second semester, first year.

DR. BRACKEN AND DR. CONDIT.

PHARMACOGNOSY.

I. *Crude Vegetable Drugs.*

The vegetable drugs of the United States Pharmacopœia are taken up in the following order: Roots, rhizomes, tubers and bulbs, woods, barks, leaves, herbs and flowers, fruits, seeds, plant exudations, resins, gum-resins, waxes and starches. Each drug is carefully examined, both macroscopically and microscopically. Students are also provided with specimens for home study. The lectures give, in compact form, the history and important features of each drug, with consideration of its importance to the pharmacist. The quizzes include careful drill on the constituents action and dose and official preparation of each drug considered. Identification receives careful attention, and there are weekly tests of the student's ability. A short course is given in the microscopic examination of some of the more important alkaloids and glucosides, and of certain emulsions and inorganic salts, if time permits.

Text-books—Sayre's Organic Materia Medica and Pharmacognosy.

Reference Books—U. S. P., U. S. D., Flückiger and Handbury's Pharmacographia, Tschirch's Atlas der Pharmacognosie, etc.

The drugs are considered in the following order:

Roots—Sarsaparilla (Mexican, Para and Honduras), senega, gentiana, taraxacum, pyrethrum, inula, lappa, apocynum, stillingia, sumbul, asclepias, phytolacca, althaea, belladonna, bryonia, calumba, rheum, glycyrrhiza (Spanish and Russian), ipecacuanha, pareira, krameria, rumex.

Rhizomes—Aspidium, zingiber (Jamaican, East Indian and African), calamus, veratum viride, iris, cyripedium, convallaria, tritium, sanguinalis, geranium, podophyllum, valeriana, arnica, serpentaria, spigelia, hydrastis, caulophyllum, cimicifuga, leptandra, gelsemium, menispermum.

Tubers and Bulbs—Jalapa, aconitum, colchicum, scilla, allium.

Twigs and Woods—Quassia, haematoxylon, santalum rubrum, guaiacum, dulcamara.

Barks—Cinchona (Rubra et Flava), prunus virginiana, vilburnum prunifolium, viburnum opulus, rubus, quercus alba, granatum, aspidosperma, frangula, rhamnus purshiana, juglans, xanthoxylum, mezereum, gossypii radix, euonymus, quillaja, ulmus, sassafras, cascarilla, cinnamomum (Ceylon, Saigon and cassia).

Leaves and Leaflets—Pilocarpus, eucalyptus, uva ursi, senna (Alexandria and India), coca (Bolivian and Truxilla), belladonna, stramonium, hyoscyamus, tabacum, digitalis, matico, salvia, hamamelis, castanea, eriodictyon, chimaphila buchu (long and short), rhus toxicodendron.

Herbs and Flowers—Santonica, caryophyllus, sambucus, calendula, cusco, arnica, matricaria, anthemis, rosa gallica, rosa centifolia, crocus, zea, chondrus, cetraria, cannabis indica, pulsatilla, scoparius, eupatorium, grindelia, tanacetum, artemisia, absinthium, lobelia, mentha piperita, mentha viridis, melissa, hedeoma, marrubium, scutellaria, chirata, sabina, chelidonium.

Fruits—Humulus, piper (longum, nigrum et album), cubeba, pimenta, rhus glabra, capsicum, colocynthis, cassia fistula, chenopodium, illicium, cardamomum, vanilla, coriandrum, conium, anisum, carum, foeniculum (Roman and German), macis, aurantii amari cortex, aurantii dulcis cortex, limonis cortex, prunum, tamarindus (East and West Indian), phytolacca, ficus, rubus idaeus.

Seeds—Physostigma, amygdala (dulcis et amara), pepo, myristica, sinapis (alba et nigra), nux vomica, staphisagria, ricinus, tigllium, stramonium, colchicum, strophanthus, linum.

Miscellaneous—Guarana, lactucarium, aloe (Socotrina, Barbadosensis, et Capensis), catechu, kino (Malabar et Pallas), opium, elastica, manna, saccharum, saccharum lactis, mel, acacia, tragacantha, mastiche, guaiacum, benzoinum, cambogia, asafoetida, ammoniacum, scammonium, myrrha, copaiba, terebinthina, terebinthina canadensis, resina, pix (Burgundica et liquida), styrax, balsamum peruvianum, balsamum toluianum, camphora, thymol, menthol, ergota (Spanish and German), sassafras medulla, galla (Aleppo et Chinensis), gossypium purificatum, kamala, lupulinum, lycopodium, amyllum, cetaceum, cera, cantharis, coccus, ichthyocola, moschus, carbo animalis.

Besides the foregoing, a number of the more important unofficial drugs will also be discussed.

Eight hours weekly. Lectures, recitation and laboratory work. First and second semester, second year.

MR. BUTTERS.

II. Powdered Drugs.

This course consists of laboratory work and occasional lectures. The more important vegetable drugs are examined microscopically, in powdered form. Especial attention is paid to the identification of unknown powders, and to the detection of the various forms of sophistication to which powdered drugs are subject.

Text-book—Schneider's Powdered Vegetable Drugs.

Reference Books—Koch's Drogenpulver, Moeller's Pharmacognostischer Atlas.

Three hours weekly, second semester, second year.

MR. BUTTERS.

ELEMENTARY PHYSIOLOGY AND ANATOMY.

- I. The work covers the study of the physiological properties of the cell, the nutritive media, the nervous mechanisms in general, muscular tissues, connective tissues and epithelial tissues. The subjects of anatomy and histology are touched upon sufficiently to lay the foundation for the proper understanding of physiological functions.

Special demonstrations are given upon animals and the living subject, illustrating the physiological functions in the muscular, nervous, vascular, respiratory and glandular systems, special attention being directed to the action of drugs and their effects upon the various systems.

Twenty-two lectures, first semester, first year.

DR. WILCOX.

- II. *Experimental Physiology.* (Post Graduate.) Laboratory work and demonstrations. A study of physiologic apparatus, electric stimuli and methods of experimentation; the demonstration and performance of experiments which illustrate physiologic function in the muscular, nervous, vascular, respiratory and glandular systems; and the study of the cardiac areas, the heart and respiratory sounds, and of pulse tracings, including training in the use of the sphygmograph, the stethoscope, phonendoscope, etc.

Six hours a week, second semester.

PROFESSOR BEARD, DRs. M. R. WILCOX AND G. D. HAGGARD.

THERAPEUTICS.

- In this course drugs are studied in groups, as governed by their physiologic action, and the therapeutic features of such groups are described. Remedial measures other than those depending upon drugs, are fully considered.

Lectures and recitations, four hours a week, first semester, second year.

PROFESSOR BRACKEN.

MINERALOGY AND CRYSTALLOGRAPHY.

- I. *Mineralogy.* A study of the minerals, ores and other sources of pharmaceutical chemicals.

First semester, second year.

MR. PARSONS.

- II. *Crystallography.* A study of the subject, with especial reference to the six systems.

First semester, second year.

MR. PARSONS.

The work of I and II requires two hours weekly during first semester of second year.

BACTERIOLOGY.

Lectures and demonstrations. The general scope of bacteriology, the history of its development and the biological and chemical problems involved in the life history of bacteria will be dealt with. The classification of the various bacterial forms, the methods of isolation and culture and the composition and manufacture of culture media will be studied until a thorough knowledge of technique is acquired. General and special study of the various antiseptics, disinfectants and bactericidal substances and conditions will be undertaken.

Laboratory work, involving the making of their own culture media by the students, the study of bacteria in cultures and under the microscope, technique of staining and other methods, including observations of chemical and biological peculiarities, will be thoroughly carried out. Testing of various germicides—chemical and physical—and the use of bacteriological methods in the examination of drinking water will form an important part of the work. Eighteen hours per week during the last eight weeks of the second semester, second year.

PROFESSOR WESBROOK, DR. CHOWNING.

This course is optional with students of pharmacy at present, but may be made obligatory.

CLINICAL MICROSCOPY.

Instruction includes (a) the macroscopical study of urine, its colors, sediments, and finer chemical tests; (b) the microscopical study of urinary sediments, including blood, pus, epithelial cells, casts, etc.; (c) the macroscopical and microscopical study of sputum, including the study of sputa from cases of pneumonia, pulmonary tuberculosis, asthma, chronic bronchitis, etc.

Lectures and laboratory work. Eight hours weekly; last third, second semester, second year.

DR. GEORGE DOUGLAS HEAD.

PHARMACEUTICAL JURISPRUDENCE.

A course of lectures in this subject is provided and seniors are required to attend. The lectures introduce the subjects of contracts, agency, commercial paper, insurance, and discuss the liability of retail and manufacturing pharmacists, etc.

Twelve lectures, second semester, second year.

PROFESSOR WULLING.

MINNESOTA PHARMACY LAW.

Several lectures fully elucidating the rights, duties, privileges and liabilities of pharmacists under the state law regulating the practice of pharmacy, are given by special lecturers near the close of the second year.

FIRST AIDS TO THE INJURED.

A series of lectures designed to qualify the pharmacist to administer upon emergency cases before the arrival of the physician.

Eight lectures, second semester, second year.

DR. MCCLOUD.

TEXT AND REFERENCE BOOKS.

Pharmacy: U. S. Pharmacopœia, Remington's, Caspari's and Coblentz's Practice of Pharmacy, U. S. Dispensatory, National Dispensatory, Lyon's Pharmaceutical Assaying, Storer's Dictionary of Solubilities, Hager's Handbook of Pharmacy, Fluckiger and Hanbury's Pharmacographia, Era Formulary, American Pharm. Assoc. Proceedings, Berichte der Pharm. Gesellschaft, Peter's Ancient Pharmacy, National Formulary, Homeopathic Pharmacopœia, German Pharmacopœia, British Pharmacopœia, Volatile Oils, Kremer's Gildemeister & Hoffman.

Pharmaceutical Chemistry: Wulling, Sadtler and Trimble, Attfield, Simon, Hoffman and Power's Examination of Medical Chemicals, Schmidt, Elsner.

General Chemistry: Remsen's Inorganic, Prescott and Johnson's, Watts' Fownes, Gmelin's Handbook, Roscoe and Schorlemmer, Watts' Dictionary, Fresenius, Sadtler's Industrial Organic Chemistry.

Prescriptions: Ruddiman on Incompatibility, Gerrish's Prescription Writing, Rice's Posological Tables, Scoville on Compounding.

Mathematics: Sturmer, Oldberg's Pharm. Problems, Weights and Measures, Mathematical Chemistry, Helm and Morgan's Metric System by Hamblin Smith.

Materia Medica: U. S. Pharmacopœia, Sayre, Bracken, Maisch, U. S. Dispensatory, National Dispensatory, Culbreth, Bently and Trimen's Medicinal Plants.

Pharmacognosy: Sayre, Maisch, Rusby and Jelliffe, Fluckiger, Huseman and Hilger's Pflanzenstoffe, Base on Vegetable Microscopy, Hanbury's Pharmacographic and Science Papers, Moeller's Atlas, Tschirch and Oesterle's Anatomischer Atlas der Pharmacognosie, Herlant's Micrographies des Poudres Officinales, Schneider's Powd. Drugs.

Botany: Coulter, Strassburger Noll and Shimper's, Bergen, Bastin, Vines, Bessey, Bentley, Gray, Cross and Bevan on Cellulose, Weisner's Rohrstoffe, Strassburger and Hillhouse, Geddes, Zimmerman on Botanical Micro-technique, Warming and Posser, Koch's Drogenpulver.

Uranalysis: Tyson, Flint, Von Jaksch on Clinical Diagnosis, Simon's Clinical Diagnosis, Beale's Chart, Rieder's Atlas of Urinary Sediments, Hoffman and Ultzmann, Peyer's Atlas, Boston's Clinical Diagnosis.

Mineralogy: Dana.

Physiology: Kirk, American Text-book of Physiology, Simon's Physiological Chemistry, Martin's Human Body, Foster, Howell's American Text-book of Physiology.

Bacteriology: Schenck, Sternberg, Fraenkel, Abbott.

Toxicology: Reese, Taylor on Poisons.

Latin: Robinson's Latin Grammar of Pharmacy, Jones, Harkness.

Miscellaneous: Gill's Oil Analysis, Mandel's Bio-Chemistry, Leffmann and Beam's Analysis of Milk, Wing's Milk and Its Products, Lassar and Cohn's Chemistry in Daily Life, Park's Hygiene and Sanitary Science, Stewart's Pocket Dose-Book.

THE WORK OF THE JUNIOR YEAR COVERS 1,139 HOURS, AS FOLLOWS:

Chemical Philosophy	Lectures and Recita- tions	64
Pharmaceutical Chemistry and Chem- ical Philosophy	Lectures	66
	Recitations	54
	Laboratory	238
Physiology and Anatomy.....	Lectures.....	22
Botany and Microscopy.....	Lectures	72
	Laboratory	144
The several junior courses con- stituting Chemistry	Lectures	60
	Recitations	15
	Laboratory	158
Qualitative Analysis	Lectures	12
	Recitations	6
	Laboratory	140
Materia Medica	Lectures and Recita- tions	64
Identification	Laboratory.....	16
Total		1,139

If students do not bring credits for Latin and physics they will be required to take in addition:

Latin	72
Physics	72

THE WORK OF THE SENIOR YEAR COVERS 1,276
HOURS, AS FOLLOWS:

Mineralogy and Crystallography...	Lectures.....	36
Pharmacognosy	{ Lectures	54
	{ Laboratory	162
Identification	Laboratory.....	72
Organic Pharmacy	Lectures.....	48
Organic Chemistry	{ Lectures	36
	{ Recitations	15
	{ Laboratory	70
Uranalysis Chemical	{ Lectures	20
	{ Recitations	10
	{ Laboratory	70
Toxicology	{ Lectures	32
	{ Recitations	15
	{ Laboratory	60
Chemistry of Hygiene.....	{ Lectures	20
	{ Recitations	10
	{ Laboratory	20
U. S. P. Quantitative Analysis...	{ Lectures	14
	{ Recitations	10
	{ Laboratory	120
Pharmaceutical Laboratory includes U. S. P. Testing, Making of U. S. P. Salts, Assay, National Formulary Preparations and Homeopathic Pharmacy.		
	Lectures	54
Ditto	Laboratory	126
Dispensing	Lectures and Laboratory...	96
Clinical Microscopy	Lectures and Laboratory..	48
Jurisprudence	Lectures	12
Therapeutics	Lectures and Laboratory...	40
First Aids	Lectures	8

Total 1,276

Special lectures from 6 to 12 during the year.

Bacteriology, optional.

JUNIOR LECTURE AND LABORATORY SCHEDULE.

FIRST SEMESTER 1905-6.

MONDAY:	8:30 to 10:30	Chemical Philosophy.
	10:30 to 11:30	Botany: Lecture.
	11:30 to 12:30	Physiology: Lecture.
	1:30 to 5:00	Botany: Laboratory.
TUESDAY:	9:30 to 10:30	Pharmaceutical Chemistry.
	10:30 to 11:30	Pharmacy: Quiz.
	11:30 to 12:30	Physiology: Lecture.
	1:30 to 5:00	Pharmacy: Laboratory.
WEDNESDAY:	8:30 to 12:30	Pharmacy: Laboratory.
	1:30 to 4:30	Botany: Laboratory.
THURSDAY:	8:30 to 9:30	Pharmacy: Quiz.
	9:30 to 10:30	Chemical Philosophy.
	10:30 to 12:30	Botany: Lecture.
	1:30 to 5:00	Pharmacy: Laboratory.
FRIDAY:	8:30 to 12:30	Pharmacy: Laboratory.
	1:30 to 4:30	Botany: Laboratory.

SECOND SEMESTER 1905-6.

MONDAY:	8:30 to 9:30	Materia Medica.
	9:30 to 10:30	Pharmaceutical Chemistry.
	10:30 to 12:30	Pharmacy: Recitation.
	1:30 to 5:00	Chemistry: Laboratory.
TUESDAY:	9:30 to 10:30	Chemistry: Recitation.
	10:30 to 11:30	First Aids.
	11:30 to 12:30	Special Lecture.
	1:30 to 4:30	Chemistry: Laboratory.
	4:30 to 5:30	Latin.
WEDNESDAY:	8:30 to 9:30	Materia Medica.
	9:30 to 12:30	Botany: Laboratory.
	1:30 to 4:30	Chemistry: Laboratory.
THURSDAY:	8:30 to 9:30	Materia Medica.
	9:30 to 10:30	Pharmaceutical Chemistry.
	10:30 to 11:30	Botany: Lecture.
	11:30 to 12:30	Chemistry: Lecture.
	1:30 to 5:00	Chemistry: Laboratory.
FRIDAY:	8:30 to 10:30	Materia Medica.
	10:30 to 11:30	Chemistry: Lecture.
	11:30 to 12:30	Botany: Lecture.
	1:30 to 4:30	Chemistry: Laboratory.
	4:30 to 5:30	Latin.

SENIOR LECTURE AND LABORATORY SCHEDULE.

FIRST SEMESTER 1905-6.

MONDAY:	8:30 to 9:30	Therapeutics.
	9:30 to 10:30	Pharmacognosy: Lecture.
	10:30 to 11:30	Identification.
	11:30 to 12:30	Organic Chemistry: Lecture.
TUESDAY:	1:30 to 5:00	Organic Chemistry: Laboratory.
	8:30 to 10:30	Pharmacognosy: Laboratory.
	10:30 to 11:30	Crystallography and Mineralogy.
	11:30 to 12:30	Organic Chemistry: Lecture.
WEDNESDAY:	1:30 to 5:00	Organic Chemistry: Laboratory.
	8:30 to 9:30	Organic Pharmacy: Lecture.
	9:30 to 10:30	Therapeutics.
	10:30 to 12:30	Pharmacognosy: Laboratory.
THURSDAY:	1:30 to 5:00	Organic Chemistry: Laboratory.
	8:30 to 10:30	Organic Pharmacy: Lecture.
	10:30 to 11:30	Crystallography and Mineralogy.
	1:30 to 5:00	Organic Chemistry: Laboratory.
FRIDAY:	8:30 to 9:30	Therapeutics.
	9:30 to 12:30	Pharmacognosy: Laboratory.
	1:30 to 5:00	Organic Chemistry: Laboratory.

SECOND SEMESTER 1905-6.

MONDAY:	8:30 to 12:30	Pharmaceutical Laboratory.
	1:30 to 5:00	Quantitative Analysis.
TUESDAY:	8:30 to 12:30	Pharmaceutical Laboratory.
	1:30 to 5:00	Quantitative Analysis.
WEDNESDAY:	8:30 to 12:30	Dispensing.
	1:30 to 4:30	Pharmacognosy Laboratory.
THURSDAY:	8:30 to 12:30	Dispensing.
	1:30 to 5:00	Quantitative Analysis.
FRIDAY:	9:30 to 10:30	Pharmacognosy Lecture.
	10:30 to 12:30	Organic Pharmacy.
	1:30 to 5:00	Quantitative Analysis.
SATURDAY:	9:00 to 12:00	Pharmaceutical Laboratory is open for the benefit of students who may be behind in any of their work.

Pharmaceutical laboratory work includes U. S. P. Testing, National Formulary Preparations, Manufacture of U. S. P. Salts, Assay, Homeopathic Pharmacy, etc.

Quantitative Analysis includes gravimetric, volumetric and gasometric estimation.

Quantitative analysis is completed about the middle of April, when the work in Clinical Microscopy and Jurisprudence takes its place.

ENTRANCE REQUIREMENTS.

A.—TO THE TWO-YEAR COURSE.

While nearly all students enrolled in this college are graduates of full four-year high school courses, such a training prior to entrance is not obligatory at the present time. The requirements, however, are being raised gradually in a way that beginning with the school year 1908 they shall be a full high school preparation or an equivalent, i. e., a preparation in six one-year credits in addition to English, algebra, geometry, physics and Latin as per the list in III.

- I. **Minimum requirements applying to all candidates seeking admission to the 1905-6 course.** Applicants who bring certificates of graduation from, or standing in, institutions of the collegiate grade or who present credentials showing that they have successfully completed the branches of study embraced in a full four-year high school course, or an equivalent, provided that among the branches completed are:

English, two years, including the principles of composition and practice in written expression.

Algebra, one year, elementary, up to beginning of higher algebra.

Geometry, one year, elementary.

Physics, one year, elementary.

Latin, two years: Grammar, one year, Caesar, (four books) one year, may be admitted without examination.

- II. Other applicants must pass examinations in the branches above specified, i. e., in English, algebra, geometry, physics and Latin, or present satisfactory evidence of having completed these branches, for which substitutes cannot be accepted.

Students will be allowed to carry not more than one condition which, however, must be removed before the final examinations in the first year subjects.

- III. **Minimum requirements applying to candidates seeking admission to courses beginning respectively 1906, 1907, and 1908.**

Applicants for admission in 1906, 1907 and 1908 respectively, must present, in addition to the five subjects enum-

erated in I., evidences of preparation in respectively two, four and six one-year credits chosen from the following list or their equivalents:

Latin	{ Cicero: One year.
	{ Vergil: One year.
Greek	{ Grammar: One year.
	{ Anabasis: One year.
German	{ Grammar: One year.
	{ Literature: One year.
French	{ Grammar: One year.
	{ Literature: One year.
Spanish	{ Grammar: One year.
	{ Literature: One year.
English	{ Latin element: One year.
	{ Literature: One year.
	{ Greek and Roman: Half year.
	{ English: Half year.
History	{ Medieval: Half year.
	{ Modern: Half year.
	{ Senior American: Half year.
Civics	Half year.
Political Economy	Half year.
Chemistry	Half year.
Botany	Half year or one year.
Zoology	Half year.
Astronomy	Half year.
Geology	Half year.
Solid Geometry	Half year.
Higher Algebra	Half year.
Physiography	Half year.
Commercial Geography ..	Half year.

Students may enter with two one-year conditions or three half-year conditions.

Applicants whose preparatory course of study has not conformed precisely to the requirements above enumerated will be allowed to offer, in lieu of a portion of these requirements, equivalent preparation in similar branches of study; and if they show, by examination, or by other evidence, that their preparation has been substantially equivalent, such branches will be accepted as substitutes for those omitted.

The examinations for entrance are conducted by the faculty of the college of pharmacy, in the pharmacognosy room, beginning at 9:00 a. m., on Monday, September 11, 1905. Lecture work begins as soon as possible after the examinations, usually the following day.

IV. All applicants are required to furnish a certificate of good moral character.

B.—TO THE THREE-YEAR COURSE.

The minimum requirements for admission to the three-year course beginning in 1905 and to that beginning in 1906, are the same as those for admission to the two-year course II. with the exception that students may carry as conditions not more than three of the entrance subjects among which English cannot be. Students must pursue the branches in which they are conditioned during their first year and pass examinations in them or present evidence of having satisfactorily completed the branches. The subjects are not taught at the college, but may be taken at the Academy near by, or at the city high schools or with private tutors. The University Y. M. C. A. usually establishes courses for the benefit of students conditioned in entrance branches.

For the school year 1907-8 applicants cannot enter with more than two conditions. After that year the requirements for entrance upon the three-year course will be the same as those for admission to the regular two-year course, i. e., a full high school preparation with the privilege of two conditions.

LIBRARY.

Students have free access to all the library facilities of the University and of the city. The medical and pharmaceutical library contains, in addition to about twenty-four hundred volumes of a technical nature, the more important American and European medical and pharmaceutical periodicals.

LENGTH OF COURSE.

The complete course extends over two years of nine months each. Students may arrange their work so as to take the course in three years, without additional expense to them. It is quite possible that three years' attendance will be required of students in this college in the near future.

The fourteenth annual course begins Tuesday, September 5, 1905, at 9:00 a. m., at which time registration commences in the Dean's office. Registration closes on Monday, September 11th. Actual work begins on Tuesday, September 12, at 9 a. m.

The college year is divided into two semesters; the second beginning January 29, 1906.

REGISTRATION.

All applications for admission to the regular courses must present to the Dean on September 4th, 1905, at 9 a. m. or not later than September 11th, their school or high school certificates, diplomas or such other credentials as they may wish to offer toward meeting in whole or in part the entrance requirements. If these are found satisfactory the applicant will register in the office of the University registrar, who will issue a card to the University accountant to whom the applicant will pay the tuition and breakage fees and microscope rental and receive receipts therefor. Registration is completed by depositing these receipts in the office of the Dean. The student is then classified.

PROFESSIONAL EXAMINATIONS.

Examinations are held at the end of the regular school year and during the last week of the first semester, and are supplementary to the written recitations and quizzes that are held at frequent intervals during the term, and with them form the basis of final determination of fitness for promotion or graduation. Students are rated throughout the year, and all students who have a standing of ninety per cent, or more, in certain of the branches, may not be required to take the final examination in those branches.

Students are not required to write graduating theses, but, instead, they keep complete records of all their laboratory work. The records are to be kept in substantially bound books, to be approved by the faculty. The respective professors call for the records for inspection and rating once a month or oftener. Duplicates of records are to be furnished the college by the students. The college provides the paper.

ATTENDANCE.

In order to become eligible for final examinations students are required to attend at least four-fifths of the lectures in

each course. This rule is not intended for the benefit of those who seek admission after the opening of the college year, but is designed to cover cases of sickness or unavoidable absence. It does not apply to laboratory courses which must be taken in full and must be entered during the first week in which they begin.

CONDITIONS

Students having conditions in more than one major or in more than two minor subjects of the first year, cannot enter upon the second year's work. All entrance conditions must be removed before the next spring examination. Candidates for graduation must have removed all conditions before entering upon the second semester of the graduating year.

Condition examinations are held during the first week of the course in September. The dates are posted in June. Conditioned students are required to inform themselves as to these dates as soon as they learn that they are conditioned, as no other notice is given.

All who carry a condition and fail to remove it within one year will be charged an extra examination fee.

Students who carry a condition into a succeeding year may find a conflict of lecture or laboratory hours. In such cases they are to give preference to the lower course.

STANDING.

The standing of students is determined by the results of recitations, written examinations and laboratory work. It is indicated by the terms "passed," "conditioned," "incomplete" or "failed." Conditions may be removed as indicated above. Incomplete work must be made up before the final examinations of the following year.

ADVANCED STANDING.

Applicants for advanced standing must pass the entrance examinations or present the usual equivalents. They must furnish satisfactory evidence of time spent and subjects covered in previous professional studies, and must present themselves at the above date and pass the examinations of all departments in which they wish to be exempt, if such examinations are deemed necessary by the professors in charge of the various departments. Students will not be permitted to substitute private work in any branch for the regular course work.

DEGREE.

This college confers the degree of pharmaceutical chemist (Ph. C.) upon the graduates of the regular course.

REQUIREMENTS FOR GRADUATION.

Regular attendance at lectures, quizzes and laboratory exercises is required. Students will not be permitted to present themselves for final examination unless they have been in attendance upon at least seven-eighths of the required number of exercises.

Every person upon whom the degree is conferred must be of good moral character, and must be at least twenty-one years old; must have attended two full lecture and laboratory courses, the last at this college, and must have passed a successful examination in the subjects required for graduation.

Drug store experience is not a requirement for graduation.

Those who fail to appear for examination after having paid their diploma fee, or those who do not pass satisfactorily, will be permitted to present themselves at any subsequent examination, upon payment of an additional fee of five dollars, and complying with all other requirements.

GRADUATE COURSE.

In addition to the regular course this college offers two graduate courses, the first continuing through one college year and leading to the degree "master of pharmacy," and the second continuing through an additional year or longer, and leading to the degree "doctor of pharmacy." The first graduate course, the one leading to the master's degree, is now in operation. It is intended that the curriculum shall include higher pharmaceutical chemistry, pharmaceutical assaying, higher organic chemistry, proximate and ultimate analysis, chemistry of food, spectroscopic work, therapeutics, and bacteriology, and a thesis of at least 3,000 words, embodying the results of original work, but this curriculum may be changed by the faculty if occasion or experience require.

The requirements for admission are a diploma from a Minnesota high school of the first grade, or an equivalent; a diploma from a college of pharmacy whose curriculum, extent and kind of work and length of under-graduate course are equal to those of the under-graduate work of this college;

an acquaintance with either German or French sufficient to enable the student to read and understand the scientific literature of those languages, and a certificate of registration as pharmacist from any state board of pharmacy. The fees for this course will be seventy-five dollars, and, in case of graduation, an additional fee of ten dollars for diploma. The rules relating to damage, waste and breakage in laboratories are the same as those applying to the undergraduate course.

The course leading to the doctor's degree will begin as soon as there are sufficient applicants.

BREAKAGE AND LOSS.

In each laboratory course the student will be assigned a certain amount of apparatus and material, for which he will give receipt. At the end of each course, if such apparatus and material are restored in good condition, this receipt will be returned to him.

All apparatus lost or damaged will be charged to him, and must be paid for before he can receive credits for his course or take his annual examinations.

CAUTION FEE.

A deposit of five dollars will be made with the accountant each year, by every student, at the time of enrollment as a caution fee. This fee is intended to cover the cost of unnecessary damage to or in the college buildings and of breakage and loss of laboratory apparatus and materials. It will be returned to the student at the close of each year, minus the cost of articles assigned to him, which are not returned in good condition, or of damage to college property for which he is individually responsible. If responsibility for such damage cannot be individually fixed, a pro rata charge upon all students will be made.

GENERAL STATEMENT.

Those who do not pass the entrance examinations, may enter and complete their course in three years, provided they pursue the subjects required for admission, in addition to the professional work that may be assigned to them, and pass their entrance examinations, before the end of the

first year. There are a number of preparatory schools in the neighborhood of the University, where the subjects required for admission may be pursued.

Students are permitted to use their own crude drugs for the making of preparations, provided such material is approved by the Dean of the college as suitable to demonstrate the lesson in hand. Finished products from such material, if of satisfactory quality, are at the disposal of the student, unless made with the tax-free alcohol belonging to the college.

Absence will not be excused, unless satisfactory reasons are given to the professor in charge. Habitual absence without a satisfactory excuse, continued indifference to study, or persistently poor scholarship may subject the student to temporary or permanent suspension. Students are earnestly requested to be present at the beginning of the school year. Special students, however, may enter at any time; they will not be rated on their work, nor will they be examined unless they make special request therefor. Any of the facilities for work in the University are open to the students of this college, subject to the approval of the dean. Opportunity is afforded to do advanced work in all branches. Text-books may be obtained after coming to the University.

Rooms and board convenient to the college can be obtained at prices ranging from \$3.00 to \$5.00 per week, according to accommodations and furnished rooms without board, from \$5.00 \$10.00, and unfurnished rooms from \$4.00 to \$7.00 per month.

A list of rooms and boarding places is kept by the secretary of the University Y. M. C. A., to whom inquiries or applications may be addressed.

FEES.

TWO YEAR COURSE.

First year	\$75.00	
Second year	90.00	
		\$165.00

Students who divide their work into three years pay their fees as follows:

THREE YEAR COURSE.

First year	\$45.00	
Second year	55.00	
Third year	65.00	
		\$165.00

There are no other fees in the regular course. Fees are payable at the time of registration. Those desiring to take special work will be required to pay fifteen dollars a subject in the didactic courses and twenty-five dollars in the laboratory courses.

Students will be charged for laboratory material if used unreasonably. At the end of laboratory courses students will be required to pay for breakage and damage to utensils in their care. If a student is careful this charge need not amount to more than two or three dollars. Students are to provide themselves with a set of metric weights, a set of apothecary's weights and steel spatulas. The expense of these is within three dollars. Students using platinum crucibles are charged for same. Upon the return of the crucible in the original condition the charge is canceled; if the crucible is in any wise damaged the full value is collected from the student. A rental of two dollars per college year is charged for the use of a microscope. All money is payable to the accountant of the University, who will give receipts which must be deposited in the dean's office.

Fees will not be returned, except in case of discontinuance for sufficient reason, before the student has been assigned to a place in the laboratory.

STATE BOARD OF PHARMACY.

The Board meets at the college five times each year. For information concerning the Board, address the Secretary, Mr. Moos, 502 Bank of Commerce Building, Minneapolis, Minn.

COLLEGE OF PHARMACY ALUMNI ASSOCIATION.

The Alumni Association meets annually in the college building the day before commencement, at 3 p. m. Every member of the Association is urgently requested to report change of address to the secretary.

COMMUNICATIONS.

Address all communications to the Dean, Professor Frederick J. Wulling, University of Minnesota, Minneapolis, Minn.

Students

SENIORS, 34.

Name.	Home Address.	Name.	Home Address.
Adams, Carleton C.,	Elgin.	Hoffman, Ed. L.,	Rochester.
Aker, Emil C.,	Montevideo.	Hanscome, Geo. A.,	Willmar.
Arnegard, Andrew,		Jones, W. Mulford,	Spencer, Ia.
	Hillsboro, N. D.	Kohlhoff, Emil C.,	Hendricks.
Bowman, Edgar S.,		Larson, Ned LeRoy,	Atwater.
	Hawleyville, I.	Lyders, Edward O.,	
Bowman, Fred M.,			Sacred Heart.
	Browns Valley	Maurier, David L.,	Brainerd.
Caldwell, Phaon J.,	St. Paul.	Mueller, Albert R.,	Springfield.
Chelgren, Victor D. E.,		Ostrander, Arthur D.,	Wadena.
	Cannon Falls	O'Brien, Giles,	Brainerd.
Cleveland, Zina N.,	Northfield.	Phelps, Alva G., M. D.,	
Crowe, John W.,	Clermont, Ia.		Minneapolis.
Desmond, Emmet R.,	Rushford.	Robitshek, Irving H.,	
Essen, Anton E.,	Renville.		Minneapolis.
Fitch, F. C.,	Hurley, S. D.	Schreiter, Norman,	
Foote, Florence May,			Red Lake Falls.
	Cumberland, Wis.	Shaffer, Geo. C.,	Elkton, S. D.
Frise, D. Curtis,		Sladek, Achilles L.,	St. Paul.
	Hamilton, N. D.	Swenseid, Ralph E.,	
Graves, Claude Wilbur,	Warsaw		Petersburg, N. D.
Herbert, Miner L.,	Sauk Center.	Vaughn, Patrick H.,	Morris.
Haines, Geo. L.,			
	New Paynesville.		

POST GRADUATE, 1.

Todd, Alice M., Minneapolis.

JUNIORS.

Name.	Home Address.	Name.	Home Address.
Baer, Homer Carl,	Kenyon.	Dretchko, Alvin LeRoy,	
Barnett, Henry Joseph,			Winthrop.
	Wheatland.	Granberg, Leonard,	Minneapolis.
Bockoven, W. H.,	Clark, S. D.	Handy, John Abner,	
Caton, Charlotte Elizabeth,			Good Thunder
	Minneapolis.	Kurth, Asa Fred,	Hendricks.
Cutting, Joseph,	Sleepy Eye.	Kennedy, Edward Philip,	
Carlson, E. G.,	Willmar.		Marshall.

Kermott, George Thrall,	Roach, Frank, Graceville.
Elk River.	Rosenthal, Fannie, Java, S. D.
Ketcham, Koyla M., Herman.	Smith, Carolyn, Minneapolis.
Murnane, George William,	Sweet, LeRoy, River Falls, Wis.
St. Paul.	Thiegs, Bernard, Long Prairie.
Madden, Leo Daniel, Eyota.	Trench, William Maurice,
Name.	Dennison.
Home Address.	Vatter, Frank Xavier, Sherburn.
McClane, Browns Valley.	Van Campen, Harry Alton,
McGovern, Thos. B.,	Cannon Falls.
Minneapolis.	Flemming, John M., Tracy.
North, Robert, Minneapolis.	Lonergan, D. A., St. Paul.
Peterson, Henry Ellis, St. Paul.	Winter, Wilber McKelcey,
Peterson, Sumner Amos,	St. Paul.
Atwater.	
Quick, Frank Robert, St. Paul.	



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1906/07

THE UNIVERSITY OF MINNESOTA

BULLETIN

Vol. IX.

JUNE 1, 1906

No. 6

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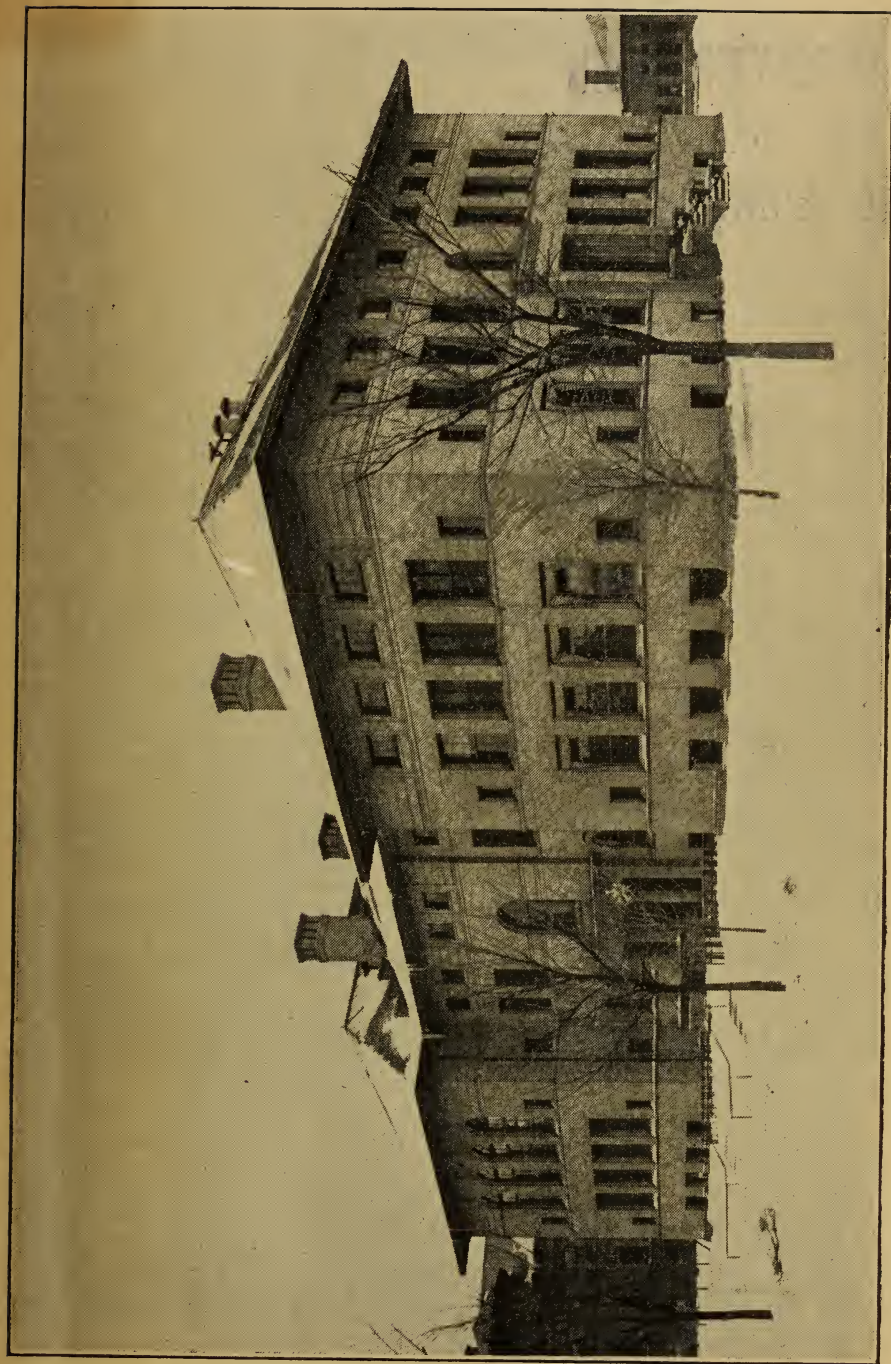
The University Bulletins are issued every six weeks during the University year, at least six numbers every calendar year. Entered at the Post-office in Minneapolis as second-class matter.

MINNEAPOLIS, MINNESOTA.

The University Catalogues are published by authority of the Board of Regents, as a regular series of bulletins. The number issued each year varies from ten to twelve. Bulletins will be sent gratuitously, postage paid, to all persons who apply for them. In calling for bulletins, please state department of the University concerning which you desire information. The full catalogue will be sent only upon receipt of ten cents to pay postage. Address,

THE REGISTRAR,

The University of Minnesota,
Minneapolis, Minnesota.



LABORATORY OF MEDICAL SCIENCES.—In the south wing of which the College of Pharmacy is housed.

The University

The University of Minnesota comprises the following named colleges and schools:

I. THE DEPARTMENT OF SCIENCE, LITERATURE AND THE ARTS:

The College of Science, Literature and the Arts,
The College of Engineering and the Mechanical Arts,
The School of Mines,
The School of Analytical and Applied Chemistry,
The College of Education,
The Graduate School,
The University Summer School.

II. THE DEPARTMENT OF AGRICULTURE:

The College of Agriculture,
The School of Agriculture,
Short Course for Farmers,
The Dairy School,
The Crookston School of Agriculture,
The Experiment Stations:
The Main Station at St. Anthony Park,
The Sub-Station at Crookston,
The Sub-Station at Grand Rapids.

III. THE DEPARTMENT OF LAW:

The College of Law.

IV. THE DEPARTMENT OF MEDICINE:

The College of Medicine and Surgery,
The College of Homeopathic Medicine and Surgery,
The College of Dentistry,
The College of Pharmacy,
The Six-Year Medical Course.

V. THE GEOLOGICAL AND NATURAL HISTORY SURVEY.

In the COLLEGE OF SCIENCE, LITERATURE AND THE ARTS, there is a four-year course of study leading to the degree, Bachelor of Arts. The work of the first year is elective within certain limitations as to the range of subjects from which the electives may be chosen. The remaining work of the course is entirely elective, with the provision that a certain number of long courses be selected. The course is so elastic that it permits the student to make the general scope of his course classic, scientific or literary, to suit his individual purpose.

THE COLLEGE OF ENGINEERING AND THE MECHANIC ARTS offers courses of study, of four years each, in civil, mechanical, electrical and municipal engineering, leading to the degrees of Civil, Mechanical, Electrical and Municipal Engineer. This college offers a four-year course of study in science and technology, leading to the degree of Bachelor of Science, with an additional year leading to the engineer's degree in any one of the various lines

offered in the college. This college also offers graduate work leading to the degree Master of Science.

THE SCHOOL OF MINES offers four-year courses of study in mining and metallurgy upon completion of which the degrees, engineer of mines and metallurgical engineer, are conferred.

THE SCHOOL OF ANALYTICAL AND APPLIED CHEMISTRY, leading to the degrees Analytical Chemist and Chemical Technologist, offers two courses of study of four years each in analytical and applied chemistry.

THE COLLEGE OF EDUCATION receives students who have completed two years of college work, and offers them a three-year course leading to the master's degree. At the end of the second year students may receive the bachelor's degree and the University teacher's certificate. Graduates of other colleges, who have pursued an equivalent course in education, may enter for the master's degree.

THE GRADUATE SCHOOL gathers into a single organization and unites for the purposes of administration all the activities of the University in all its schools and colleges in so far as they relate to advanced instruction offered for the second or higher degrees, viz.: Master of Arts and Doctor of Philosophy conferred for advanced, non-technical study; Master of Science and Doctor of Science for technical study; Master of Laws and Doctor of Civil Law for advanced legal studies. The privileges of this school are in general open to all Bachelors of Arts, of Science, pure and applied, and of Laws, from reputable colleges and universities having courses substantially equivalent to those at this university.

THE UNIVERSITY SUMMER SCHOOL is organized for a six weeks session in June and July under the direction of the State Department of Public Instruction. In the elementary section courses are given for teachers in all the common school branches and in preparation for the state teachers' certificates. In the college section courses are given for high school teachers and in preparation for the state professional certificate. Students who desire University entrance credits and credits toward the bachelor's degree may secure these by pursuing not more than two full courses at each session.

SPECIAL COURSES. In each of the Colleges, students of mature age and adequate preparation are permitted to pursue, under the direction of the faculty, one or two distinct lines of study.

EXTENSION LECTURES. Professors in the University are prepared to give a limited number of extension lectures from time to time. For subjects, speakers, terms and dates, application should be made to the Chairman of the Committee on University Extension.

THE COLLEGE OF AGRICULTURE offers a four-year course in agriculture. The degree of Bachelor of Science, in Agriculture, is conferred on completion of the course. Students in this College may specialize along the line of forestry or of home economics and secure the degree Bachelor of Science (in Forestry, or in Home Economics).

THE SCHOOL OF AGRICULTURE offers a three-years course of study and is a training school for practical farm life and in domestic economy. The College of Agriculture is open to graduates of this School who have completed the fourth year of work required for admission to the college.

The Dairy School offers practical instruction in dairying, specially designed for those who are actually engaged in the manufacture of butter and cheese.

The Short Course for Farmers is designed to be of the greatest help possible to those actually engaged in farming.

The Crookston State School of Agriculture offers a course of study quite similar to that given in the School of Agriculture.

THE COLLEGE OF LAW offers a three-years course of instruction leading to the degree of Bachelor of Laws. Graduate work leading to the degrees, Master of Laws, and Doctor of Civil Laws is offered. An evening class is provided in this college.

THE COLLEGE OF MEDICINE AND SURGERY AND THE COLLEGE OF HOMEOPATHIC MEDICINE AND SURGERY offer four-year courses of study, of nine months each. Upon completion of either of the prescribed courses the degree, Doctor of Medicine is conferred.

In the Colleges of Science, Literature and the Arts, of Medicine and Surgery, and of Homeopathic Medicine and Surgery, there has been established a combined course of six years, leading to the degrees, Bachelor of Science, and Doctor of Medicine.

THE COLLEGE OF DENTISTRY offers a three-years course of study, of nine months each. Upon completion of the prescribed course the degree of Doctor of Dental Surgery is conferred.

THE COLLEGE OF PHARMACY offers a two- or three-years course of study leading to the degree of Pharmaceutical Chemist. This college also offers graduate work leading to the degrees, Master of Pharmacy and Doctor of Pharmacy.

Historical

AN ACT to re-organize and provide for the government and regulation of the University of Minnesota, and to establish an Agricultural College therein.

As amended by Chapter X of the General Laws of 1872:

AN ACT to amend Chapter I of the Session Laws of 1868, relating to the University of Minnesota.

Section 1. The object of the University of Minnesota, established by the Constitution at or near the Falls of St. Anthony, shall be to provide the means of acquiring a thorough knowledge of the various branches of literature, science and the arts, and such branches of learning as are related to agriculture and the mechanic arts, including military tactics and other scientific and classical studies.

Sec. 2. There shall be established in the University of Minnesota five or more colleges or departments, that is to say, a College of Science, Literature, and the Arts, a College of Agriculture, including "military tactics," a College of Mechanic Arts, a college or Department of Law, and also a College or Department of Medicine. The Department of Elementary Instruction may be dispensed with at such a rate and in such wise as may seem just and proper to the Board of Regents.

Sec. 3. The government of the University shall be vested in a board of ten Regents of which the Governor of the State, the State Superintendent of Public Instruction, and the President of the University, shall be members ex-officio and the remaining seven members thereof shall be appointed by the Governor, by and with the advice and consent of the Senate. Whenever a vacancy occurs therein, for any cause, the same shall be filled for the unexpired term in the same manner. Of the Regents thus appointed, two shall be commissioned and hold their offices for one year, and two for two years, and three for three years. Their successors shall be appointed in a like manner, and shall hold their offices for the full term of three years from the first Wednesday of March succeeding their appointment and until their successors are appointed and qualified. The President of the University shall have the same rights, powers and privileges as other members, *except the right of voting, and shall be, ex-officio, the Corresponding Secretary of the Board of Regents.

Sec. 4. The Regents of the University shall constitute a body corporate, under the name and style of "The University of Minnesota," and by that name may sue and be sued, contract and be contracted with, make and use a common seal and alter the same at pleasure; a majority of the voting members shall constitute a quorum for the transaction of business, and a less number may adjourn from time to time.

Sec. 5. The Board of Regents shall elect from the members of the

Board, a President of the Board; (a) Recording Secretary and (a) Treasurer, who shall hold their respective offices during the pleasure of the Board. And the President and Treasurer each before entering upon the duties of his office, shall execute a bond in the penal sum of fifty thousand dollars, with at least two sufficient sureties, to the State of Minnesota, to be approved by the Governor, conditioned for the faithful and honest performance of the duties of his office according to law, which bonds, when so approved, shall be filed at the office of the Secretary of State.

Sec. 6. The Board of Regents shall have the power, and it shall be their duty, to enact by-laws for the government of the University of Minnesota in all its departments; to elect a President of the University, and in their discretion a Vice-President, and the requisite number of professors, instructors, officers and employes, and to fix their salaries, (and) also the term of office of each, and to determine the moral and educational qualifications of applicants for admission, and in the appointment of professors, instructors and other officers, and assistants of the University, and in prescribing the studies and exercise thereof; and in all the management and government thereof, no partiality or preference shall be shown to one sect or religious denomination over another; nor shall anything sectarian be taught therein. And the Board of Regents shall have the power to regulate the course of instruction, and (to) prescribe the books and authorities to be used, and also to confer such degrees and grant such diplomas as is usual, in their discretion. It shall be the duty of the Recording Secretary to record all the proceedings of the Board, and carefully preserve all its books and papers; and before entering upon the duties of his office he shall take and subscribe an oath to perform his duties honestly and faithfully as such officer. It shall be the duty of the Treasurer to keep an exact and faithful account of all moneys, bills receivable and evidence of indebtedness, and all securities of property received or paid out by him, and before entering upon his duties shall take and subscribe an oath that he will well and faithfully perform the duties of Treasurer thereof. It shall be the duty of the

*By the later act the President has been given a vote.

President to preside at the meetings of the Board; and, in case of his inability to preside, the Board may appoint a President pro tempore.

Sec. 7. In addition to all the rights, immunities, franchises and endowments heretofore granted or conferred upon the University of Minnesota, for the endowment, support and maintenance thereof, there shall be and is hereby inviolably appropriated and placed at the disposal of the Board of Regents thereof, to be drawn from the State treasury upon the order of the President, drawn upon the State Auditor, countersigned by the Secretary of the Board, and payable to the order of the Treasurer of the Board, all the interest and income of the fund to be derived from the sale of all lands granted and to be granted to the State of Minnesota by virtue of an act of Congress, entitled "An act donating lands to the several States and Territories which may provide colleges for the benefit of agriculture and the mechanic arts," approved July 2d, 1867, and also all such gifts, grants and contributions to the endowment thereof as may be derived from any and all such sources.

Sec. 8. And in order to effect a settlement of all remaining indebtedness of the University, all the powers and authorities given by Chapter 18 of the laws of 1864, entitled "An act relating to the University of Minnesota," and Chapter 11 of the laws of 1866, entitled "An act to amend an act relating to the University of Minnesota, approved March 4, 1864," to the Regents therein mentioned, are hereby given to and conferred upon the Board of Regents of the University of Minnesota aforesaid, and the said acts are

hereby continued and shall be in force until such outstanding indebtedness is fully liquidated.

Sec. 9. The first meeting of the first Board of Regents under the provisions of this act, shall be holden at the University building on the first Wednesday in March, 1868, at which meeting the officers of the Board shall be elected, and the annual meetings of the Board shall be holden on the second Tuesday in December in each and every year thereafter.

Sec. 10. Any person or persons contributing a sum of not less than fifteen thousand dollars shall have the privilege of endowing a professorship in the University, the name and object of which shall be designated by the Board of Regents.

Sec. 11. The said Board of Regents shall succeed to and have control of the books, records, buildings, and all other property of the University; and the present Board of Regents shall be dissolved immediately upon the organization of the Board herein provided for. Provided, that all contracts made at that time, binding upon the Board then dissolved, shall be assumed and discharged by their successors in office.

Sec. 12. It shall be the duty of the Board of Regents herein provided for, to make arrangements for securing suitable lands, pursuant to the act of Congress, above mentioned, in the vicinity of the University, for an experimental farm, and as soon thereafter as may be to make such improvements thereon as will render the same available for experimental purposes in connection with the course in the agricultural college; and for such purposes, the Board of Regents is hereby authorized to expend a sum not exceeding the amount specified by the act of Congress aforesaid.

Sec. 13. On or before the second Tuesday in December in each and every year, the Board of Regents, through their President, shall make a report to the Governor, showing in detail the progress and condition of the University during the previous University year, the wants of the institution in all its various departments—the nature, costs and results of all improvements, experiments and investigations, the number of professors and students—the amount of money received and disbursed—and such other matters, including industrial and economic statistics, as they deem important or useful. One copy of said report shall be transmitted to each of the other colleges endowed under the provisions of the said act of Congress, and one copy to the Secretary of the Interior.

Sec. 14. The President of the University shall be the President of the General Faculty, and of the special faculties of the several departments or colleges, and the executive head of the institution in all its departments. As such officer, he shall have authority, subject to the Board of Regents, to give general direction to the practical affairs and scientific investigations of the University, and in the recess of the Board of Regents to remove any employe or subordinate officer not a member of the Faculty and supply for the time being any vacancies thus created. He shall perform the customary duties of a corresponding secretary, and may be charged with the duties of one of the professorships. He shall make to the Superintendent of Public Instruction, on or before the second Tuesday in December in each and every year, a report showing in detail the progress and condition of the University during the previous University year—the number of professors and students in the several departments—and such other matters relating to the proper educational work of the institution as he shall deem useful. It shall be the duty of the President of the University to make to the Board of Regents, on or before the second Tuesday in December in each and every year, a report showing in detail the progress and condition of the University during the previous University year—the nature and results of all impor-

tant experiments and investigations and such other matters, including economic and industrial facts and statistics, as he shall deem useful.

Sec. 15. Chapter eighty of the laws of eighteen hundred and sixty, chapter eighty-seven of the laws of eighteen hundred and sixty-two, and so much and such parts of any and all acts and laws, whether general or special, as are inconsistent with the provisions of this act, are hereby repealed.

Sec. 16. This act shall take effect and be in force from and after its passage.

Approved February 18, 1868. Act to amend approved February 29, 1872.

The Board of Regents

CYRUS NORTHROP, LL.D., MINNEAPOLIS . . .	<i>Ex-Officio</i>
The President of the University	
The HON. JAMES T. WYMAN, MINNEAPOLIS, . . .	1907
The President of the Board	
The HON. JOHN A. JOHNSON, ST. PETER, . . .	<i>Ex-Officio</i>
The Governor of the State	
The HON. JOHN W. OLSEN, ALBERT LEA . . .	<i>Ex-Officio</i>
The State Superintendent of Public Instruction	
The HON. STEPHEN MAHONEY, MINNEAPOLIS . . .	1907
The HON. O. C. STRICKLER, NEW ULM . . .	1907
The HON. S. G. COMSTOCK, MOORHEAD . . .	1909
The HON. THOMAS WILSON, ST. PAUL . . .	1909
The HON. B. F. NELSON, MINNEAPOLIS . . .	1909
The HON. A. E. RICE, WILLMAR . . .	1909
The HON. EUGENE W. RANDALL, MORRIS . . .	1910
The HON. DANIEL R. NOYES, ST. PAUL . . .	1910
C. D. DECKER, AUSTIN,	
Secretary of the Board	

Executive Officers

THE UNIVERSITY

CYRUS NORTHROP, LL.D., *President*

ERNEST B. PIERCE, B.A., *Registrar*

C. D. DECKER, *Purchasing Agent and Secretary of the Board of Regents.*

THE COLLEGES

JOHN F. DOWNEY, M.A., C.E., *Dean of the College of Science, Literature and the Arts*

FREDERICK S. JONES, M.A., *Dean of the College of Engineering and the Mechanic Arts*

WILLIAM R. APPLEBY, M.A., *Dean of the School of Mines*

GEORGE B. FRANKFORTER, Ph.D., *Dean of the School of Chemistry*

GEORGE F. JAMES, Ph.D., *Dean of the College of Education.*

HENRY T. EDDY, C.E., Ph.D., LL.D. *Dean of the Graduate School.*

WILLIAM M. LIGGETT, *Dean and Director of the Department of Agriculture*

WILLIAM S. PATTEE, LL.D., *Dean of the College of Law*

PARKS RITCHIE, M.D., *Dean of the College of Medicine and Surgery*

EUGENE L. MANN, B.A., M.D., *Dean of the College of Homeopathic Medicine and Surgery*

ALFRED OWRE, D.M.D., *Dean of the College of Dentistry*

FREDERICK J. WULLING, Ph.M.D., LL.M., *Dean of the College of Pharmacy*

LIBRARIES AND MUSEUMS

WILLIAM WATTS FOLWELL, LL.D., *Librarian*

LETTIE M. CRAFTS, B.L., *Assistant Librarian*

INA FIRKINS, B.L., *Library Assistant*

MARY S. MCINTYRE, B.S., *Librarian of School of Agriculture*

THOMAS G. LEE, M.D., *Librarian of Department of Medicine*

HUGH E. WILLIS, LL.M., *Librarian of the College of Law*

CHRISTOPHER W. HALL, M.A., *Curator Geological Museum*

HENRY F. NACHTRIEB, B.A., *Curator of the Zoölogical Museum*

BUILDINGS AND GROUNDS

ALLEN W. GUILD, *Superintendent of Buildings*

EDWIN A. CUZNER, *Superintendent of Grounds*

The University Council

At the regular meeting of the Board of Regents of the University May 31st, 1905, a University Council was established according to the following plan:

I. The name of the body shall be the University Council. It shall consist of the President of the University, the Deans of the various colleges and schools, one elected representative from each college or school for each four hundred students or major fraction thereof, and one representative of the general alumni association.

II. The elected members shall serve for a period of one year. They shall be chosen by the various faculties at the time of the selection of standing committees. The representative of the general alumni association shall be chosen by that body at its annual meeting from among the alumni who are not members of the University.

III. The Council shall be authorized to—

a) Appoint the following committees or the faculty representation thereon:

The University auditing committee.

The University press committee.

The committee on athletics.

The committee on University relations to other institutions of higher learning.

The committee on health and sanitation.

The committee on commencement and other University functions.

The committee on catalogue, programs and courses of study.

The committee on student entertainments and social affairs.

and such other such committees as the general University interests may require.

b) Receive reports from such committees and to make such recommendations as may be required.

c) Consider and act upon any matter of general University interest beyond the province of a single faculty which may be referred to it by the President of the University or any faculty.

IV. The Council shall hold stated meetings upon the first Monday of October, December, April and June, and such other meetings as the President of the University may call.

The representatives to the Council from the several colleges of the University are as follows:

The College of Science, Literature and Arts

DEAN JOHN F. DOWNEY,
PROFESSOR F. L. MCVEY,
PROFESSOR WILLIS M. WEST,
PROFESSOR H. F. NACHTRIEB.

The College of Engineering

DEAN F. S. JONES,
PROFESSOR HENRY T. EDDY.

The School of Mines

DEAN WM. R. APPLEBY.

The School of Chemistry

DEAN GEO. B. FRANKFORTER.

The College of Education,

DEAN GEO. F. JAMES.

The Graduate School

DEAN H. T. EDDY.

The College of the School of Agriculture

DEAN WM. M. LIGGETT,
PROFESSOR HARRY SNYDER.

The College of Law

DEAN WM. S. PATTEE,
JUDGE A. C. HICKMAN,

The College of Medicine and Surgery

DEAN PARKS RITCHIE,
PROFESSOR F. F. WESBROOK.

The College of Homeopathic Medicine and Surgery

DEAN EUGENE L. MANN.

The College of Dentistry

DEAN ALFRED OWRE.

The College of Pharmacy

DEAN FREDERICK JOHN WULLING

College of Pharmacy Calendar

1906-1907

- September 10. Entrance examinations and registration begin.
September 15. Entrance examinations and registration completed.
Classification of students.
September 18. Classes called for regular work.
November 29. Thanksgiving day. Holiday.
December 22. Holiday recess begins. (No classes.)
December 25. Christmas day.
January 8. Work resumed.
January 28. First semester examinations begin.
February 1. First semester examinations end.
February 5. Second semester begins.
February 12. Lincoln's birthday. Holiday.
February 22. Washington's birthday. Holiday.
June 1. Second semester ends.
June 3. Second semester and final examinations begin.

COMMENCEMENT WEEK.

- SUNDAY, June 9. Baccalaureate service.
MONDAY, June 10. Senior class exercises.
TUESDAY, June 11. Senior promenade.
WEDNESDAY, June 12. Alumni day. Meeting at 3 p. m. at college.
THURSDAY, June 13. Commencement day—the thirty-fifth annual commencement.
FRIDAY, June 14. Summer vacation begins.

CALENDAR FOR 1906-1907

1906

1907

JULY

S.	M.	T.	W.	T.	F.	S.
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31	..	..	..	..
..	..	..	..	..	..	..

AUGUST

..	..	..	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	..
..	..	..	..	..	..	..

SEPTEMBER

..	..	..	..	..	..	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	..	..	..	..	..	..

OCTOBER

..	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31	..	..	..
..	..	..	..	..	..	..

NOVEMBER

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18	19	20	21	22	23	24
25	26	27	28	29	30	..
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DECEMBER

..	..	..	..	..	..	1
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9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31	..	..	..	..	..

JANUARY

S.	M.	T.	W.	T.	F.	S.
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FEBRUARY

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MARCH

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24	25	26	27	28	29	30
31	..	..	..	..	..	..

APRIL

..	1	2	3	4	5	6
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14	15	16	17	18	19	20
21	22	23	24	25	26	27
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MAY

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12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	..
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JUNE

..	..	..	..	..	..	1
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23	24	25	26	27	28	29
30	..	..	..	..	..	..

Equipment

GROUNDS AND BUILDINGS

The University campus comprises about forty-five acres lying between University avenue and the river and between Eleventh and Nineteenth avenues Southeast. The campus is well wooded with a fine growth of native oaks and commands a beautiful view of St. Anthony Falls and the city, but is sufficiently removed from the business center of the city to insure desirable quiet and retirement. The buildings upon the campus number twenty, and are valued at over \$800,000. A special clinical building for the use of the department of medicine is located in the southern part of the city, where there is an abundance of clinical material, and within easy reach of the University. The campus is valued at about \$450,000 and the equipment of the buildings at about \$300,000.

The State Experimental Farm, upon which are located the buildings of the experiment station and the department of agriculture, consists of over two hundred and fifty acres of very valuable land, half way between the twin cities and within a thirty-minutes' ride of either city. The farm is valued at \$400,000, and the sub-stations located at Crookston and Grand Rapids, at \$30,000 more. The buildings and equipment of the department of agriculture are valued at over \$400,000.

NEW BUILDINGS.

The Legislature of 1905 appropriated \$350,000 for the erection of a "Main Building," of which \$200,000 is available in 1906, and \$150,000 will be available in 1907: this amount will be supplemented by \$60,000 received from insurance on the Old Main Building, destroyed by fire in September, 1905. This will give a total for building and equipment of \$410,000.

The building is now in process of construction. It will be 322 feet in length and three stories in height above the basement, with rooms

arranged on both sides of straight halls extending through the length of the building. It will provide class and seminar rooms, and offices for the departments of Astronomy, Mathematics, Greek, Latin, German, French, and Spanish, Scandinavian, Comparative Philology, Rhetoric and Oratory, Philosophy and Psychology, and Education. It will also contain the Scandinavian Museum, German Museum, Psychological Laboratory, Dean's Office, Faculty Parlor, Postoffice, Hall for Literary Societies, Men's Study Hall, Women's Study Hall, Minnesota Daily, Minnesota Magazine, Gopher, Cloak Rooms, Janitors' Rooms, Toilet Rooms, Work Shop, and Store Rooms.

The material is brick with cut stone trimmings.

GIFTS MADE TO THE UNIVERSITY.

The will of the late Mrs. A. F. Elliott, formerly of Minneapolis, but more recently of California, left a bequest to the University, from which the Regents expect to realize at least \$125,000.00. The heirs have requested that this fund be used to erect a Hospital in connection with the Medical Department of the University.

The Hon. Thomas H. Shevlin has donated to the University \$60,000 for a "Woman's Building," to be known as the "Alice Shevlin Hall." The gift has been accepted by the Regents, and the building is now being erected on the site of the "Old Main" between the Library and Law buildings. It will be a two-story and basement structure, the material used being pressed brick with stone trimmings. It will have a frontage of 114 feet on Pillsbury Avenue and a depth of 55 feet. The purpose of this building is to furnish suitable rest and study rooms for the women attending the University. The building will contain several Society Rooms, a large Lunch Room, and a general Reception Hall, all of which are greatly needed. It is expected that the building will be ready for occupancy at the commencement of the next college year, September 1st.

THE FINANCIAL MANAGEMENT OF THE UNIVERSITY.

The financial management of the University is in the hands of the "Board of Regents," except in the erection of new buildings, the purchasing of fuel, and the placing of insurance on buildings and contents, which are in the hands of the State Board of Control.

The Legislature of 1903 appropriated the sum of \$100,000 for the erection of a building for pathology, bacteriology and hygiene. The building, which is known as the Institute of Public Health and Pathology, has been erected with the general group of medical buildings and will be ready for occupancy for the year 1906-07. It is 213 feet long by 100

feet deep in the central portion and consists of the central main portion, 60x100 feet, with north and south wings each 56x75 feet.

Space is provided on three floors for a museum and library. A Pasteur Institute is housed in this building for the treatment of and research in hydrophobia. The two large laboratories for teaching pathology, bacteriology and public health and numerous offices, private and research laboratories and a large amphitheatre are arranged with special attention to efficiency and convenience. The State Board of Health Laboratories are housed here in the end of the building adjacent to the special laboratory built by that Board some years ago. Photographic laboratories, workshops, cold storage and autopsy rooms are provided.

UNIVERSITY REVENUES.

The sources of the University income for Current Expense are three, viz: 1st, the United States Government; 2nd, the State, and 3rd, the University.

The U. S. Government gave to each of the States certain lands for educational purposes. The proceeds of these lands, as fast as sold, are invested in state bonds. These bonds are known as the University permanent fund, and at present amount to \$1,400,000. The annual interest on these bonds is at present about \$53,000. In addition to the interest on bonds, the University receives from the government the Hatch Bill appropriation of \$15,000.00, an appropriation for the benefit of the Experiment Station, and the Morrill Bill appropriation of \$25,000.00, an appropriation for the encouragement of the Departments of Agriculture, Mechanic Arts, and Military Science.

RECAPITULATION.

Interest on Bonds and land contracts.....	\$53,000.00	
U. S. Government, Hatch Bill appropriation.....	15,000.00	
U. S. Government, Morrill Bill appropriation.....	25,000.00	
Total from the Government		\$ 93,000.00
The University receives from the State an appropriation of 23-100 of one mill per dollar on a valuation of \$846,000,000, which will give about	\$194,000.00	
A flat appropriation called a deficiency appro. of..	60,000.00	
An appropriation for support of School of Mines..	5,000.00	
An appropriation for salaries of Mines and Elec. Eng.	4,500.00	
Total from the State		\$263,500.00

Amount received from Student's fees.....	\$126,000.00
Dental Infirmary receipts	12,000.00
Station & School, sales and fees	14,000.00
Miscellaneous Receipts, University	2,000.00
Total from University	\$154,000.00
Total estimated current expense receipts for	
1906	\$510,000.00

LIBRARIES

The following libraries are easily accessible to the University students: Minneapolis—The University Libraries, 110,000 volumes; the Public Library, 135,000 volumes; the Minneapolis Bar Association, the Guaranty Loan Law, and the New York Life Insurance Law Libraries, numbering a total of about 30,000 volumes, are open under certain restriction to law students; the Minnesota Academy of Natural Sciences, 12,000 titles.

St. Paul—The State Historical Library, 78,000 volumes; the State Library, 35,000 volumes; Public Library, 55,000 volumes.

The University Library consists of:

1. *The General Library.*
2. *College Libraries*, including those in Law, Medicine, Engineering, Agriculture.
3. *Departmental Libraries*, including those in Art, Astronomy, Animal Biology, Botany, Chemistry, French, Geology, German, Greek and Latin, History, Military Science, Pedagogy, Physics, Rhetoric, Scandinavian.

The private collections of professors are available when necessary for research.

The whole number of bound volumes owned by the University is about 115,000. Unbound books and pamphlets, about 30,000. About 500 current periodicals are received in the general and other libraries.

The departmental libraries consist mainly of books of reference and current periodicals relating to technical subjects.

The general library is open to students and the public from 8:00 a.m. to 9:30 p.m., every day of the University year, except Sundays and legal holidays.

The Law Library contains nearly all the English Reports, including those of Canada, from the earliest decisions down to the year 1900; nearly all the reports of the different states of the Union; all the reports of the United States Supreme court, and all the Federal Court reports. It contains also the digests of these reports and an excellent selection of standard text-books and law dictionaries.

The Nelson Law Library is a rare collection of fifteen hundred volumes, donated to the University by the Honorable R. R. Nelson, of St. Paul, upon retirement from the Federal bench. It contains many old English reports, in addition to those already mentioned, and many ancient treatises upon common law.

A rare and unique addition to the Law Library has been secured by the donation of Judge Collins and former Attorney-General Childs to the University of all the Briefs and Paper-Books in the cases argued in the Supreme Court of Minnesota since 1888, making a fine collection of over five hundred bound volumes.

The Medical Library contains a large and well assorted collection of books, sets of journals, bound and unbound pamphlets, relating to all branches of medicine. All of the leading medical journals are on file in the reading room. The various laboratories have also reference libraries devoted to their special lines of work.

The library was greatly enriched by the bequest of the late Dean, Perry H. Millard, M. D., who bequeathed his entire private medical library to the department. This collection consists of several hundred volumes and pamphlets, including many rare and old medical works, sets of journals especially rich in surgical works.

To all these library facilities may be added the Minneapolis Public Library, which is within easy reach of the University and is opened freely to the students of the University. This library contains over one hundred twenty-five thousand bound volumes and over fourteen hundred of the leading newspapers, magazines and periodicals of the world.

MUSEUMS.

The museums of the University contain material obtained from various sources, arranged with special reference to its use for illustration. Among the more notable collections are the following:

(a) *In Geology and Mineralogy.* The Kunz collection of minerals, purchased of George F. Kunz; several suites of crystalline rocks secured from various sources; The Ward collection of casts contributed in part by citizens of Minneapolis; collections of the rocks, fossils, minerals and economic products of Minnesota; upwards of 9,000 entries gathered by the geological survey of the State; the Sardeson collection of paleozoic fossils of Minnesota, Wisconsin, Iowa and neighboring states, comprising 30,000 specimens; a series of 3,000 thin sections of typical rocks and minerals largely representing Minnesota localities; purchased material comprising a fine collection of crystals; 5,000 minerals and 3,000 specimens of economic minerals and crystalline rocks, and a collection of over 4,000 photographs and lantern slides.

(b) *In Zoölogy*: All the material collected by the State Zoölogist; a collection of mounted Minnesota birds representing about one-third of the species found in the State; a number of the mammals of the State and a few from the more western states; a collection of fishes, molluscan shells, corals and other foreign material.

The ornithological room contains the excellent Thomas S. Roberts and Franklin Benner collection of skins, nests and eggs of Minnesota birds. Other groups of animals are more or less numerously represented, and are receiving annual additions from the Zoölogical Survey.

(c) *In Botany*: The general herbarium numbering about 25,000 specimens and comprising the series of plants collected by the State Botanist; an alcoholic collection of material for dissection; a collection of woods of Minnesota; a limited series of carboniferous and cretaceous fossil plants, including the Lesquereaux collection from the Minnesota River localities.

(d) *In Technology*: A cabinet of specimens illustrating the products and processes of applied chemistry is being collected by the Professor of Chemistry, as opportunity offers. The collection embraces fuel, ores, furnace products, textile materials, both raw and manufactured, dyewoods and other materials used in dyeing; specimens illustrating the bleaching and printing of cotton, linen and woolen goods, earthenware, pottery. etc.

(e) *In Classics*: Some material illustrating classical geography, topography, chronology, mythology, archaeology, and art has been collected, consisting mainly of plans and charts, casts, pictorial illustrations, facsimiles of manuscripts and inscriptions.

(f) *In English*: A few fac-similes of manuscripts, plates that may serve for the purpose of archaeological instruction, publication of texts, reprints of blackletter books and of original editions, photographs and portraits have been gathered.

(g) *In Civil Engineering*: The department is collecting samples of road material typical of the various localities of the State, and leading materials used in street paving, such as granite, trap rock, brick and asphaltum. A set of standard sections of steel and wrought iron is provided for illustration in the study of structural design.

(h) *In Mechanical Engineering*: The collection consists of models of mechanical motions especially relating to the work in kinematics; sectioned apparatus, such as injectors, water meters and steam separators; various collections of drop forging in iron, steel and copper; miscellaneous samples of commercial work representing the product of special machines; groups of standard nuts, bolts and screws; samples of belting, ropes, steel and iron cables, rawhide gears, and other material especially useful for illustrative purposes.

(i) *In Electrical Engineering Museum:* This museum contains a growing collection of samples furnished by various manufacturers and dealers for demonstrating the merits of different products and for illustrating modern practice; an excellent collection showing the development of electrical instruments, lightning arresters, switches, primary and secondary batteries, early forms of dynamos and motors, lighting apparatus and various industrial applications of electricity; also a collection of samples from repair shops and elsewhere, illustrating the effects of wear, accidents and abuse.

(j) *In Engineering Mathematics:* This department has recently added to its apparatus used for illustration in teaching, several types of slide rules, including those of Thatcher, Faber, Keuffel and Esser, Schureman's Computer, Boucher's Calculator; also Amsler's Polar Planimeter.

In Mathematics: The Schroeder wooden and the Schilling gypsum, string and paper models for Solid Analytical Geometry, many of the Schilling models for illustrating the Theory of Surfaces, several of the Schilling mechanical devices for describing various loci, the Keufel and Esser models for Solid Geometry, and large slated globes, suitably mounted, for use in Spherical Geometry and Spherical Trigonometry.

ASTRONOMICAL OBSERVATORY.

The students' astronomical observatory contains a ten and one-half inch combined, visual, photographic and spectroscopic refracting telescope, constructed by Warner Swasey and Brashear; a photographic clock.

GYMNASIUM.

The Gymnasium is located in the Armory, and is well equipped with a variety of gymnastic appliances. The object of the Gymnasium is to provide all of the students of the University opportunity for exercise to build up their general health. It also provides special training to correct physical defects and functional derangements. The gymnasium is in charge of a professional Medical Director and Assistant and the training is under their direct supervision. A thorough physical examination is offered each student immediately before and after the gymnasium course, and a record is made of the same. The examination of these records shows a marked improvement in the standard of health of the average student during his college course. The Gymnasium is open at all times to all young men in the University who are free to use the apparatus and to pursue a course of physical training under the direct supervision of the Director and his assistant. In some of the Colleges of the University, this work is required of all men.

Organizations and Publications

RELIGIOUS.

The Students Christian Association was organized in 1869, its object being to promote growth in Christian character, and to engage in such religious work as may be deemed expedient and necessary.

The Association owns a commodious building, which serves as the headquarters for student religious activity. All persons in sympathy with the object of the association are eligible to membership.

The Young Men's Christian Association has as its object the promotion of "growth in grace and Christian fellowship among its members and aggressive Christian work, by and for students." This association leases the Students' Christian Association building and keeps it constantly open, with a General Secretary in charge. All men in sympathy with the object of the association are eligible to membership. This building is maintained as the social and religious headquarters of all young men in the University.

This Association also provides an employment bureau whose services are free to students in all departments of the institution, as well as a committee to help students to find comfortable rooms and boarding places. The Association also maintains an educational department in which students may make up their entrance conditions at a nominal charge for instruction.

The General Secretary will be pleased to correspond with any young man intending to come to the University. Any inquiry about board, room, employment, or general information will gladly be answered, and a handbook will be sent to anyone wishing it. Address the General Secretary of the Young Men's Christian Association, University of Minnesota, Minneapolis, Minnesota.

The Young Women's Christian Association is the center of Christian life among the young women of the University. Its object is "to deepen spiritual thought in the University woman, to environ her with a semblance of home, to bring to her friendship, assistance and sociability by stimulating student fellowship, to give her personal help when necessary; thus developing in her the Christ ideal of culture in womanhood."

To this end frequent socials and informal teas are given throughout the year; twice each week twenty minute prayer meetings are held, a dozen circles meet one hour a week for devotional Bible study; and from time to time missionary meetings are held. The General Secretary

devotes all of her time to the Association and will be pleased to correspond with any young woman who wishes information regarding the University.

All young women are invited to visit the Young Women's Christian Association room before registering. Women from the upper classes will be there during the opening days to give advice and assistance.

Any inquiry about board, room, employment, or general information will gladly be answered by Miss Agnes Crounse, '07, 3840 Richfield Ave., Minneapolis.

The University Catholic Association was organized by the Catholic students in the spring of 1900. The purpose of the Association is the study of the Bible and of the doctrines and history of the Catholic Church. Membership is open to any one connected with the University. Regular meetings are held every Sunday afternoon in the rooms of either the Young Men's or the Young Women's Christian Association, through the courtesy of those organizations. The Association is planning to erect a building on or near the campus at an early date.

Aside from the religious objects, the Association tends to promote good fellowship among its members. Early in each University year a reception is tendered to new students and during the year two or more socials are held.

Further information may be obtained by addressing the Secretary of the Association at the University.

DEBATE AND ORATORY.

Literary Societies.—The literary societies are mainly debating clubs. Every student is welcome to attend the literary sessions, but the business sessions are usually held behind closed doors. Students desiring to join should make early application to some member of the society he prefers, as the membership is limited.

The Minnesota Literary Union—Is a federation of the members of the following societies: Shakopean, Forum, Castalian, Minerva and Arena. Four meetings are held each year.

Membership Limit: *Shakopean*, 35, men; *Forum*, 30, men; *Minerva*, 30, women; *Law Literary*, unlimited, law students; *Castalian*, 35, men; *Theta Epsilon*, 30, women; *Thalian*, 25, women.

The Debating Board has charge of home and inter-collegiate oratorical contests.

The Northern Oratorical League is composed of the oratorical associations of the University of Michigan, Northwestern University, the University of Wisconsin, Oberlin College, the State University of Iowa, the University of Chicago, and the University of Minnesota. Its purpose is to foster an interest in public speaking and to elevate the stand-

ard of oratory by holding annual contests. The contests are open only to undergraduates.

The Iowa-Minnesota League is composed of the two universities and holds an annual contest in debate.

The Central Debating League is composed of the debating associations of the University of Michigan, the University of Minnesota, Northwestern University, and the University of Chicago. Its purpose is to discuss in public leading questions of the day and in this way to develop ready and forceful speakers.

The four universities are arranged in two groups for the semi-final debates, which are held the second Tuesday in January. On the first Friday in April in each year, the winners from the groups meet in a final debate in the city of Chicago.

The University competes annually for the *Hamilton Club* prize. Michigan, Minnesota, Wisconsin, Iowa, Ohio, Indiana, Northwestern and Chicago Universities and Knox College constitute the league. Each of the colleges named submits one oration upon Alexander Hamilton or some character or event connected with his time. From the orations submitted four are chosen to be delivered before the Hamilton Club.

MUSICAL, SOCIAL AND OTHER ORGANIZATIONS.

The Women's League is an organization of the women of the University for mutual helpfulness and sociability.

The Dramatic Club is organized for the study and practice of dramatic art. One or more plays are put on the stage each year.

The Glee and Mandolin Clubs give a public concert each year at the University and make a tour of the state during the holidays.

The University Band is organized as a part of the military system of the University and is composed of about sixty musicians. It is under the efficient leadership of an Instructor in Music, and furnishes music for military and many other University affairs.

LITERARY AND SCIENTIFIC ORGANIZATIONS.

Phi Beta Kappa.—A chapter of the honorary society of *Phi Beta Kappa* was established at the University in 1892. A small proportion of the graduates of the College of Science, Literature and the Arts are elected to membership each year. Election is based upon high scholarship and character.

The Philological Society.—The object of the Philological Society is to promote philological investigation and study.

Greek Club is a society composed of professors, students and alumni

of the Department of Greek for the study of Greek life, language and customs.

Societas Latina is a society in the Department of Latin, having for its special aim the securing of greater proficiency in reading and writing Latin.

The Scandinavian Literary Club is an organization whose purpose is to promote interest in the study of Scandinavian literatures.

The Philosophical Club meets bi-weekly in the evening during the winter months to read and discuss contemporary philosophy. The membership consists of the professors, instructors, and qualified students of the department.

The Economic Club meets twice a month for debate in economic and political subjects.

The Graduate Club is a club organized for the purpose of fostering a greater interest in graduate work, for mutual help, and for the discussion of topics under investigation.

The University Liberal Association is an organization of students and faculty members formed for the discussion of topics of broad and current interest. It meets twice a month, usually on Saturday evening.

Sigma Xi.—A chapter of the honorary scientific society of *Sigma Xi* was established at the University in 1896. A small proportion of the graduates of the scientific, and technical department are elected to membership each year. Election is based upon high scholarship and character.

American Chemical Society.—A local section of the American Chemical Society has been organized in Minnesota with headquarters at the University.

The Camera Club is an organization of instructors and students interested in photography and photographic chemistry.

The Geological Club is an organization of instructors and students interested in geology, for the discussion of geological problems.

The Botanical Students' Journal Club is an organization of juniors, seniors and graduate students, of the Department of Botany, for the review of current botanical literature.

The Zoölogical Journal Club for instructors and advanced students who meet for the discussion of current zoölogical literature.

The Zoölogical Reading Club meets evenings at the homes of the professors and is for instructors and graduate students. Its purpose is the reading and discussion of philosophical works on Zoölogy.

The Physical Colloquium is composed of instructors and graduate students and meets for the discussion of recent investigations in physical science.

The Society of Engineers meets once in two weeks to listen to addresses by prominent engineers and for the discussion of various

engineering topics. The Year Book of this society is published annually. It is devoted to the publication of articles upon engineering subjects by professors and students in the College of Engineering and the Mechanic Arts.

The Mining Society is an organization of mining engineering students who meet for the purpose of hearing lectures and discussing mining engineering problems.

The Mathematical Society is composed of professors, assistant professors and instructors whose work is in Pure or Applied Mathematics, and meets the third Wednesday of each month for the discussion of mathematical subjects.

PUBLICATIONS.

The University Bulletins are published by authority of the board of Regents twelve times a year—every four weeks during the University year. Bulletins will be sent gratuitously, postage paid, to all persons who apply for them.

The Minnesota Alumni Weekly is published every Monday during the University year. The Weekly is published entirely in the interest of the alumni and is devoted to alumni news and such University news as may be of special interest to the alumni.

The Minnesota Daily is published five times each week during the University year by an organization of University students.

The Yearbook of the Society of Engineers is published annually by the engineering students.

The Junior Annual, called the "Gopher," is a book published annually by the junior class of the University.

The Minnesota Magazine is a monthly magazine devoted to the cultivation of literary taste and effort among the students of the University. It is managed by a board of editors chosen from the senior class.

ATHLETICS.

The Athletic Association is an organization having for its object the general physical well-being of the students and the encouragement of a proper spirit in favor of hearty, manly sports.

Control of Athletics. The athletic sports of the University are under the supervision of a Board of Control made up of eleven members; two are members of the faculty, two are alumni and seven are students. This board has general supervision of all matters connected with athletic contests and arranges the schedule of games. It is the purpose of this board to foster a spirit in favor of fairness and honesty in all athletic contests.

Northrop Field is an enclosed athletic field containing about six acres,

immediately adjoining the armory. It is surrounded by a high brick wall, the gift of A. F. Pillsbury, and is one of the finest athletic fields in the country.

Scholarships and Prizes

UNIVERSITY SCHOLARSHIPS

It is the policy of the University to establish scholarships in the different departments, where extra help is needed for instruction, under regulations somewhat as follows:

1. The appointments are made by the Executive Committee of the Board of Regents, upon the recommendation of the department in which the appointment is desired, after approval by the General Faculty.

2. Recipients of scholarships may be either graduate or undergraduate students.

3. The scholarships are not intended as gifts or benefactions from the state to the recipients, but as provisions under which services may be rendered the University.

4. It is understood that these services are of a nature which shall assist the holder of a scholarship to attain the mastery of some line of work in the department to which he is appointed.

ENDOWED SCHOLARSHIPS

THE MOSES MARSTON SCHOLARSHIP IN ENGLISH.

Friends and pupils of the late Professor Marston, Ph. D., have given and pledged one thousand dollars as a memorial fund. The annual income of the fund is to be used to help some student in the long English course. The award of the income is made on the basis of pecuniary need and of deserving scholarship.

THE ALBERT HOWARD SCHOLARSHIP FUND.

Under the last will and testament of Mr. James T. Howard, of the town of St. Johnsbury, Vermont, \$4,166.81 was left to the University to establish a scholarship to be known as the "Albert Howard Scholarship." This scholarship is assigned by the Executive Committee upon the recommendation of the General Faculty.

STUDENT LOAN FUNDS

THE ELLIOT SCHOLARSHIP LOAN FUND.

To fulfill the wish of the late Dr. A. F. Elliot to aid young men who find their efforts to obtain a practical education embarrassed through lack of means, the income of \$5,000, amounting to \$250 per year, is placed in the hands of the Board of Regents to be used as a scholarship loan fund for assisting young men in the school of mines.

The conditions of granting the scholarship loans are: The financial needs of the applicant, his scholarship, moral character, enthusiasm shown in his work and promise of usefulness in his profession. When money is available it may be loaned to pay expenses of worthy students during sickness. The loans are to repaid, without interest, at the earliest convenience of the recipients.

THE GILFILLAN TRUST FUND.

The Honorable John B. Gilfillan has given to the University the sum of fifty thousand dollars, yielding an annual income of two thousand dollars, to be used by the Board of Regents to assist worthy students, needing such aid, to secure an education. The Regents are empowered to give this aid in the way of loans or gifts, according to the circumstances of the case. As a rule the fund is used as a loan fund, and a small rate of interest is charged. The details of the regulations which have been adopted by the Regents for the administration of the fund may be learned by addressing the President of the University.

PRIZES.

THE PILLSBURY PRIZE.

Three prizes of \$100, \$50 and \$25, offered by the heirs of the Hon. John S. Pillsbury, are awarded for the best work in the Department of Rhetoric, as evidenced finally by an oration in public.

THE '89 MEMORIAL PRIZE IN HISTORY.

The class of 1889, at graduation, established a prize of \$25 each year, to be known as the '89 Memorial Prize, and to be given for the best thesis in history. The award is made by a Professor of History in some other institution.

THE DUNWOODY PRIZE.

Mr. William H. Dunwoody, president of the St. Anthony and Dakota Elevator Company, has provided a cash prize of \$75 for the members of

the team winning the inter-sophomore debate, and another prize of \$25 for the student in the sophomore class writing and delivering the best oration.

THE PEAVEY PRIZE.

Mrs. Heffelfinger continues the prize of \$100, established by her father, the late Frank H. Peavey. This prize consists of \$75 for the members of the team winning the freshman-sophomore debate, and another prize of \$25 to the student in the freshman or sophomore class writing and delivering the best oration.

THE WYMAN PRIZE.

A prize of twenty-five dollars is offered by the Honorable James T. Wyman, of Minneapolis, through the department of political science, for the best essay of three to five thousand words by an undergraduate student, on the subject of "The Influence of Immigration upon the Development of the Northwest."

THE WILLIAM JENNINGS BRYAN PRIZE.

The Hon. William Jennings Bryan has given the University the sum of \$200.00 for the encouragement of studies in political science. The annual income will be given as a prize to the writer of the best essay upon a topic to be announced each year. The competition is open to all students of the College of Science, Literature and the Arts.

THE BRIGGS PRIZE IN FOUNDRY PRACTICE.

For the encouragement of studies in foundry practice, Mr. O. P. Briggs, Commissioner of the National Foundrymen's Association, Detroit, Mich., offers \$75 annually, in two prizes, which are to be accompanied by gold medals. The competition is open to sophomores in the College of Engineering, and the prize will be awarded for the best essay relative to the above subject. No prize will be awarded if less than five essays are submitted in competition. Essays should contain about 3,000 words, and must be submitted to the Professor of Rhetoric on or before May 1st.

THE LOWDEN PRIZE.

Mr. Frank O. Lowden, of Chicago, offers as a prize to be competed for by the Northern Oratorical League, an endowment of \$3,000, which will yield an annual income of about \$175. A prize of \$100 will be given

to the winner of the first place, \$50 to the orator who gets second place, and the remainder will be set aside each year for an interest fund to accumulate, and, in time, produce another endowment.

MINNEAPOLIS LIFE UNDERWRITERS ASSOCIATION'S PRIZE.

A prize of fifty dollars is offered by the Minneapolis Life Underwriters Association for the best essay on life insurance written by a senior of the class of 1906. Essays should contain at least 3,000 words and be presented to the Professor of Political Economy on or before May 21, 1906.

THE ROLLIN E. CUTTS PRIZE IN SURGERY.

Dr. Mary E. Smith Cutts, '91 Medical, has given the University, as a memorial of her husband, Dr. Rollin E. Cutts, '91 Medical, the sum of \$500.00, the income from which is to be awarded in the form of a gold medal to that member of the senior class of the College of Medicine and Surgery who presents the best thesis showing original work upon a surgical subject.

General Information

THE ONE-MILE LIQUOR LAW.

A state law provides that "it shall be unlawful for any person to sell or dispose of any spirituous, vinous, or malt liquors within the distance of one mile of the Main Building of the University of Minnesota, as now located in the city of Minneapolis; provided, that the provisions of this section shall not apply to that part of the city of Minneapolis lying on the west side of the Mississippi River."

MILITARY DRILL.

The act of Congress of 1862, providing for the establishment of "Land Grant Colleges," requires that instruction be given in Military Science and Tactics at all institutions that are its beneficiaries. The Armory is located on the University campus and has all the facilities usually provided in a modern Armory. The United States Government supplies the University with the necessary arms, equipment and ammunition for instruction in infantry and artillery drill, and details a commissioned officer of the regular army to take charge of the department.

EXPENSES OF STUDENTS.

Several years ago a number of young men and women, at the request of University officials kept careful account of their expenses for the University year. The result was that the expenses of the young men ranged from \$217.00 to \$397.00. The same students earning sums varying from \$237.00 to \$272.00. The young women reported expenses varying from \$150.00 to \$355.00. These figures do not include fees, and, as the cost of living has increased decidedly, probably 25 per cent should be added to these figures to make them safe.

The students upon whose statements these figures are based were representative students; they were not extravagant nor did they deny themselves unduly to get along. While students can live within the figures given above, they would not, owing to the increased cost of living, be able to live as comfortably nor to have as many privileges as these students had.

Board can be had at prices ranging from \$2.10 to as high as the student

can afford to pay. In private families board ranges from \$3.00 to \$5.00.

Furnished rooms vary in price from \$8 to \$20 per month. Two students rooming together would of course reduce this expense. It is sometimes possible for a student, rooming alone to secure a good room at an expense but little higher than when two room together; but such chances are the exception and not the rule. New students will find that they will be more likely to secure comfortable rooms and suitable board if they will consult the general secretary of either the young men's or young women's Christian association immediately upon arrival at the University, or if they will correspond with these officers before coming to the University.

The student who learns some trade before coming to the University has a great advantage over the student who has to earn his money by ordinary manual labor. Students have earned their whole expenses while attending the University, and have made good records at the same time. Other students have done so much work that they have not been able to keep up their studies, and have thus missed the one thing for which they were attending the University.

If it is possible for the student to have a part of his expenses paid, he should not attempt to earn his way entirely by his own exertions. It is a comparatively easy thing for a young man to earn half his living while attending the University and yet do good work in his classes. Students who want work seldom fail to find it. In coming to the University, the student should bring enough money with him so that he can live comfortably for a few weeks until he can find something to do.

A pamphlet has been published containing five papers (one by a young woman), relating actual experience of students who have made their way through the University.

Students who contemplate making their own way through college will find here stated the stern and unpleasant side, as well as the brighter side of such a life. A copy will be sent free to any address upon application.

The Department of Medicine

The Department of Medicine includes the following named colleges:

The College of Medicine and Surgery.

The College of Homeopathic Medicine and Surgery.

The College of Dentistry.

The College of Pharmacy.

Each college is distinct in the government of its internal affairs, has its own faculty and an independent curriculum, save in the studies of anatomy, physiology, chemistry, histology and embryology. These studies, so far as they are required in the various courses, are pursued by all students of the department in common.

BUILDINGS AND EQUIPMENT.

The department is resident in four buildings situated upon the University campus, viz.: Medical hall, the laboratory of medical science, the laboratory of chemistry and the laboratory of anatomy.

Medical hall contains the offices of the deans of the college of medicine and surgery, of the college of homeopathic medicine and surgery and of the college of dentistry; the large amphitheatre and lecture rooms of the several colleges, the library and reading room of the department, the laboratory of materia medica, the operating rooms and laboratories of dentistry and the dental infirmary.

The laboratory of medical sciences is a building especially designed for laboratory uses. One wing of the building is occupied by the college of pharmacy and the department of physiology. It contains the office and private laboratory of the dean of the college of pharmacy, the pharmaceutical and botanical laboratories, the laboratory of dispensing with preparation and stock rooms. The office of the secretary of the college of medicine and surgery, a large lecture amphitheatre, especially arranged for demonstrative work, the laboratories of physiology, physiologic chemistry and practical dietetics, and operative surgery are also situated in this wing.

The center and opposite wing are occupied by the departments of his-

tology and embryology. Each of these branches has its well-lighted laboratories, preparation rooms and private study rooms.

The laboratory of chemistry is a one-story brick building devoted entirely to the use of this department. It is equipped with amphitheatre, laboratories, preparation rooms, store rooms, and private offices of the professor and assistant professor of chemistry.

The laboratory of anatomy is a new two-story and basement building, 35x60 feet. In the basement are the morgue, injecting room, cold storage vaults, and engine and apparatus for the carbon dioxide freezing plant. On the first floor are an amphitheatre seating one hundred and seventy-five students, the private offices of the professors and instructors, a private dissecting room and a small laboratory for research work. The entire second floor is devoted to laboratories for practical work in anatomy.

The Institute of Public Health and Pathology, now almost completed, will be ready for occupancy for the year 1906-07. It is located on the University campus with the other medical buildings.

The building, which is 213 feet over all and 100 feet deep in the central portion, consists of a central main portion 60x100 feet, with north and south wings each 56x75 feet.

In this building are housed the State Board of Health laboratories, the Pasteur Institute, where research in and treatment of rabies will be carried on; diagnostic laboratories for bacteriological, chemical and pathological work of the State Board of Health and for teaching and research work in the University departments. Special books and periodicals, interesting pathological and bacteriological specimens and materials are provided for in the spacious library and museum. The central portion of the building is occupied by a large lecture and autopsy amphitheatre, special research laboratories, photographic laboratories and a cold storage plant. Ample room is furnished for special offices and laboratories where practical work in pathology, bacteriology or public health may be carried on independently.

The University Clinical building is situated in a part of the city most favorable to the development of an out-door service and, at the same time, accessible to the students. It is of two stories and covers 40x150 feet. It affords ample floor space for amphitheatres, waiting rooms, dispensary and class rooms for each of the clinical branches. Wards and laboratories, in which section work in medical and surgical diagnosis can be conducted, have been equipped.

The department of medicine is in intimate relationship, through its several faculties, with the hospitals, infirmaries and dispensaries of the cities of Minneapolis and St. Paul. Through these agencies it utilizes, for the benefit of its students, the clinical material of these two large centers of population. The location of the University near the interurban car line enhances the value and convenience of these clinical opportunities.

A medical library, containing over three thousand volumes and supplied with current periodicals, is open to all the students of the department. The collection has been chosen with special regard to the need for reference work and collateral reading. The general library of the University and the public and medical libraries of Minneapolis and St. Paul are also open to the students of this department.

ANNOUNCEMENT.

In the organization of this college the Board of Regents has aimed to secure the co-operation of the pharmacists of the state. The character of instruction is of high order and every effort is made to comply with the demands of the profession in the Northwest, or elsewhere, in the maintenance of a course of instruction of the highest grade. The college is located on the University campus, in the Medical Science Laboratory building, and is one of the colleges of the department of medicine, but is distinct in the government of its affairs. The building and laboratories are on a par with the best, and their equipment is complete.

The work of the college, as outlined in the following pages, is conducted by means of lectures, recitations and laboratory exercises. Students find their time fully occupied. Those who feel unable to complete the work in two years may divide it in a manner to complete it in three years. Practising pharmacists who desire to take certain branches of study may avail themselves of any of the college facilities, but their studies and time will be subject to regulation as special students.

The College of Pharmacy

CYRUS NORTHROP, LL. D., *President.*

FREDERICK JOHN WULLING, Ph. G., Phm. D., LL. M., etc., *Dean: Professor of Pharmacology, Pharmaceutical Chemistry and Pharmaceutical Jurisprudence.*

HENRY MARTYN BRACKEN, M. D., *Professor of Materia Medica.*

..... *Professor of Pharmacognosy.*

H. C. CAREL, B. S., *Professor of Chemistry; General, Medical, Analytical, Quantitative and Organic, Toxicology and Hygiene.*

CONWAY MACMILLAN, M. A., *Professor of Botany.*

FREDERICK K. BUTTERS, M. S., *Instructor in Botany and Practical Pharmacognosy.*

FRANK FAIRCHILD WESBROOK, M. A., M. D., C. M., *Professor of Bacteriology.*

GEORGE B. FRANKFORTER, M. A., Ph. D., *Professor of Organic Chemistry (Post-Graduate).*

GEORGE DOUGLAS HEAD, B. S., M. D., *Instructor in Clinical Microscopy.*

RICHARD OLDING BEARD, M. D., *Professor of Physiology.*

M. RUSSELL WILCOX, M. D., *Demonstrator in Physiology.*

G. D. HAGGARD, M. D., *Assistant in Physiology.*

..... *Instructor in Medical and Pharmaceutical Latin.*

ARTHUR L. PARSONS, B. A., *Instructor in Mineralogy.*

GUSTAV BACHMAN, Phm. D., *Instructor in Pharmacy and Laboratory Assistant.*

I. DERBY, B. S., *Assistant Professor of Chemistry.*

W. H. CONDIT, M. D., *Instructor in Materia Medica.*

C. N. MCCLOUD, Phm. D., M. D., *Lecturer on First Aids to the Injured.*

A. E. CARR, D. M. D., *Assistant in Pharmaceutical Chemistry.*

E. A. LOOMIS, B. S., *Assistant in Pharmaceutical Chemistry.*

Courses of Instruction

First Year. History of pharmacy; metrology; physics of pharmacy, pharmaceutical processes; pharmacopœial preparations; mathematics of pharmacy; pharmacy quiz; identification; chemical philosophy; pharmaceutical chemistry of the non-metals and their preparations; the chemistry of the elements with special reference to organic materia medica; pharmacopœial inorganic salts and their official preparations; qualitative analysis; identification of salts; comparative morphology of the cryptogams; morphology and anatomy of the higher seed plants; micro-botany; materia medica, organic and inorganic; physiology and anatomy.

Second Year. Carbon compounds; toxicological chemistry; uranalysis; chemistry of hygiene; classification of organic compounds; U. S. P. organic compounds and their preparation; U. S. P. testing; quantitative analysis; manufacture of official salts; national formulary; incompatibility; dispensing; pharmaceutical assay; synthetic remedies; homeopathic pharmacy; identification of salts; pharmacognosy; powdered drugs; therapeutics; mineralogy and crystallography; bacteriology (optional); clinical microscopy; pharmaceutical jurisprudence; Minnesota pharmacy law; first aids to the injured.

Third Year. Students taking three years to do the work of the regular two-year course, will divide the work in an equitable way subject to the approval of the Dean. Students are urged to devote three years to the completion of the course.

PHARMACY.

I. History of Pharmacy, including Pharmacopœias, Dispensatories, textbooks, works of reference. History of the U. S. Pharmacopœia through all its revisions.

Lectures, recitations and laboratory work, first semester, first year.

PROFESSOR WULLING.

II. Metrology. Weights and measures, including metric system; balances—construction, varieties, methods of weighing; specific gravity in detail; specific volume, alligation, etc.

Lectures, recitations and laboratory work, first semester, first year.

PROFESSOR WULLING, MR. BACHMAN AND ASSISTANT.

III. The Physics of Pharmacy. Students are required to have had elementary physics before entering. This course covers a review and more extended elucidation of such divisions of physics as apply to pharmaceutical processes. Special attention is paid to heat.

Specific heat; thermometers—the various scales, testing and comparing thermometers; combustion of solids, liquids and gases in various kinds of furnaces, stoves and burners; application of heat in drying ovens, steam, hot-air and water ovens; drying closets, desiccators, blow-pipes, crucibles; baths for controlling and equalizing heat; water—salt—oil—glycerine—paraffine—hot air baths; evaporation—spontaneous, rapid, slow, in vacuo; ebullition—boiling points, fusion; sublimation, calcination, dehydration, torrefaction, roasting, reduction, oxidation, carbonization, deflagration, ignition, etc.

Solution—chemical, pharmaceutical, simple, chemical, saturated; circulatory displacement.

Dialysis—construction of dialyser, osmosis, endosmosis, exosmosis, crystalloids and colloids, etc.

Lectures, recitations and laboratory work, first semester, first year.

PROFESSOR WULLING, MR. BACHMAN AND ASSISTANT.

- IV. *Pharmaceutical Processes.* The processes not taken up in III constitute the subjects of this course. In part they are: drug grinding and powdering; comminution; contusion; trituration; sifting; elutriation; levigation; lixiviation; filtration—filtering medii, filtration of solutions, oils, syrups, rapid filtration, filtration in vacuo, hot filtration, colater; washing—displacement, continuous; decantation—the syphon and its uses; precipitation—methods, vessels, separating, drying, weighing; granulation—granular effervescent salts; desiccation; exsiccation; crystallization—water of crystallization deliquescence, efflorescence, methods of obtaining crystals, collecting, draining, washing, drying crystals, fractional, crystallization; distillation—stills, simple, fractional, destructive; extraction; maceration; expression; percolation—history, theories, percolators, exhaustion, repercolation, continuous percolation, fractional percolation; clarification; decolorization.

Lectures and laboratory work, first semester, first year.

PROFESSOR WULLING, MR. BACHMAN AND ASSISTANT.

The work of I, II, III and IV aggregates: Lectures, 72 hours; recitations, 54 hours; laboratory work, 238 hours.

- V. *Pharmacopoeial Preparations.* This course includes the study and preparation of official bodies for which the U. S. P. gives formulæ and processes, and includes waters, solutions, syrups, muclages, spirits, infusions, decoctions, tinctures, fluid extracts, vinegars, wines, liniments, ointments, cerates, resins, oleo-resins, honeys; glycerites, mixtures, emulsions, elixirs, collodions, pills, capsules, powders, suppositories, bougies, plasters, papers, cachets, etc.

Lectures, recitations and laboratory work, first semester, first year.

PROFESSOR WULLING, MR. BACHMAN AND ASSISTANT.

- VI. *National Formulary.* This course includes the study of the National Formulary and the making of one or more members of each class of preparations.

Lectures and laboratory work, second semester, second year.

PROFESSOR WULLING, MR. BACHMAN AND ASSISTANT.

- VII. *Homeopathic Pharmacy.* A brief exposition of the principles underlying homeopathic medication, with some laboratory work.

PROFESSOR WULLING, MR. BACHMAN AND ASSISTANT.

- VIII. *Incompatibility.* Therapeutic, pharmaceutical and chemical incompatibility is taken up in lecture and recitation work preliminary to IX.

Second semester, second year.

PROFESSOR WULLING.

- IX. *Dispensing.* The study of the prescription and practical work in dispensing upwards of one hundred typical prescriptions.

Lecture and laboratory work, second semester, second year.

PROFESSOR WULLING, MR. BACHMAN.

- X. *The Mathematics of Pharmacy.* While students are required to have a preparation in arithmetic and algebra before entering, they receive frequent drills at stated hours and as occasion requires or suggests throughout the entire course. Students are required to take a final examination in the subject at the end of the first year, at which examination they must attain a rating of at least eighty per cent.

- XI. *Pharmacy Quiz.* A thorough review of the work covered in II, III and IV. Two hours weekly, a second half of first semester and second semester of first year.

MR. BACHMAN.

- XII. *Identification of Official Preparations.* The study of the physical properties of official preparations.

First and second year.

MR. BACHMAN.

THE CHEMISTRY OF PHARMACY.

- I. *Chemical Philosophy.* This course is preliminary to all other work in chemistry. It treats of the principles underlying the science, and endeavors to elucidate chemical facts and phenomena. The subject is divided into—

Chemical Statics, embracing the study of the theories of atoms and molecules, atomic weights, atomic and molecular volume, quantivalence, molecular structure, ions, electric qualities, etc., and—

Chemical Dynamics, the study of reactions and their equations, thermics, chemical properties in general, etc.

Two hours weekly, first semester, first year.

PROFESSOR WULLING.

- II. *The Pharmaceutical Chemistry of the Non-metals and their Preparations.* Two hours weekly, second half of first semester of first year.

PROFESSOR WULLING.

- III. *The Chemistry of the Elements*, with especial reference to inorganic materia medica.

Lectures, recitations and laboratory work, eighteen hours weekly first half, second semester, first year.

PROFESSOR CAREL AND MR. DERBY.

ASSISTANTS: MR. CARR AND MR. LOOMIS.

- IV. *Pharmacopoeial Inorganic Salts and their Official Preparations*, with especial reference to their description, properties and manufacture.

Three hours weekly, second semester, first year.

PROFESSOR WULLING.

- V. *Qualitative Analysis.* Lectures and recitations and laboratory work in the qualitative determination of the metals and acids of pharmacy. This course follows and supplements course III.

Eighteen hours weekly, second half, second semester, first year.

PROFESSOR CAREL AND MR. DERBY.

ASSISTANTS: MR. CARR AND MR. LOOMIS.

- VI. *Chemistry of the Carbon Compounds.* A brief course dealing with those features of organic chemistry that are of especial medical and pharmaceutical interest, and which serve as an introduction to courses VII, VIII and IX.

Lectures and recitations and laboratory preparation of some important organic bodies used in medicine. First semester, second year.

PROFESSOR CAREL AND ASSISTANTS.

- VII. *Uranalysis.* Qualitative and quantitative.

Lectures, recitations and laboratory work, including the qualitative analysis of twenty specimens of normal and pathological urine, and the quantitative determination of sugar, albumen, chlorine, phosphates and urea and the standardization of reagents. First semester, second year.

PROFESSOR CAREL AND MR. DERBY.

ASSISTANTS: MR. CARR AND MR. LOOMIS.

- VIII. *Toxicological Chemistry.* Organic and inorganic. The chemistry of poisons and their antidotes and a study of symptoms, treatment and post-mortem appearances, including the simulation of symptoms of certain diseases, animal parasites, animal and vegetable products, etc.; the physiological action of important poisons and their antidotes; toxicological examination of blood, urine and various organs.

Lectures, recitations and laboratory work, first semester, second year.

PROFESSOR CAREL AND MR. DERBY.

ASSISTANTS: MR. CARR AND MR. LOOMIS.

- IX. *Chemistry of Hygiene.* The chemistry of the atmosphere, water, soil, etc.; the sanitary examination of air and water.

Lectures, recitations and laboratory work, first semester, second year.

PROFESSOR CAREL.

ASSISTANTS: MR. CARR AND MR. LOOMIS.

The work of VI, VII, VIII and IX aggregates from eighteen to twenty-one hours weekly during the first semester of the second year.

- X. *Classification of Organic Compounds.* A continuation and amplification of the theoretical chemistry of the carbon compounds begun in VI, serving as a fuller preparation for XI.

Two hours weekly, second half first semester, second year.

PROFESSOR WULLING.

- XI. *Chemistry of the Pharmacopoeial Organic Compounds and their Preparations.* This course includes the critical study of cellulose and its derivatives, destructive distillation products, starches, sugars, fermentation products, organic acids, fixed oils and fats, volatile oils, waxes and animal fats, alkaloids, glucosides, animal drugs and products, etc.

Two to three hours weekly during the second semester of the second year.

PROFESSOR WULLING.

- XII. *Pharmacopoeial Testing.* A critical study of the identity, purity, limit and percentage tests of the Pharmacopoeia and their application either wholly or in part to practically every official organic and inorganic salt and compound.

Lectures, recitations and laboratory work, eight hours weekly, second semester, second year.

PROFESSOR WULLING, MR. BACHMAN AND ASSISTANT.

XIII.—Quantitative Analysis of U. S. P. Salts and Preparations. This course comprehends the study of the principles of quantitative determination, and includes the gravimetric volumetric and gasometric determinations of the U. S. Pharmacopœia, but not pharmaceutical assay work (xv). Lectures, recitations and laboratory work. Fifteen hours weekly during the first ten weeks of second semester of second year.

PROFESSOR CAREL AND ASSISTANTS

Manufacture of Official Organic and Inorganic Salts. The preparation of from twenty to forty official salts as time permits.
Second semester, second year.

PROFESSOR WULLING AND MR. BACHMAN.

XV. Pharmaceutical Assay. The quantitative determination of active constituents of a number of the potent organic drugs and preparations.
Second semester, second year.

PROFESSOR WULLING AND MR. BACHMAN.

XVI. Synthetic Remedies. A study of the chemistry of synthetic remedies in medical use.
Second semester, second year.

PROFESSOR WULLING.

XVII. Identification of Salts. The study of the physical identity of the more important official inorganic and organic salts.
One hour weekly during second semester of first year and entire second year.

MR. BACHMAN.

XVIII. Micro-Chemistry. A brief course is provided for seniors if time permits.
Second semester, second year.

PROFESSOR WULLING.

XIX. Physiologic Chemistry and Microscopy (Post Graduate). Laboratory work and demonstrations. A practical study of the several classes of proteids; of carbohydrates, fats, muscle and bone; of gastric juice, saliva, pancreatic juice and bile in their respective digestions; of glycogen, and of blood lymph, chyle and milk. Microscopic study of the carbohydrates in vegetable and animal forms; of the physiologic emulsions of fat; of the crystalline waste products, and of the physiologic conditions of the blood cells and of blood crystals. Practical instruction is given during this course in the enumerations of the blood cells, in the estimation of hæmoglobin and of the corpuscles in mass, in the spectroscopic examination of the blood in the determination of blood tests, and in the use of the polariscope.

Twelve hours a week, first half of first semester, second year.

PROFESSOR BEARD, DRs. M. R. WILCOX AND G. D. HAGGARD.

PHARMACEUTICAL BOTANY AND MICROSCOPY.

I. The Comparative Morphology of the Cryptogams. The course embraces the comparative morphology of the cryptogams. Especial attention is paid to the green algæ, the foundation of the vegetable kingdom. The other groups of algæ and the fungi are briefly treated, particular stress being laid on their economic relations to other plants, to animals and to man. About one-half of the semester is devoted to the study of the archegoniate series of plants. Numerous examples of liverworts, mosses, ferns, and their allies are studied in the laboratory, and the line of development which leads from the algæ through the archegoniate series to the seed plants is emphasized.
First semester, first year.

MR. BUTTERS.

II. The Morphology and Anatomy of the Higher Seed Plants. In this course especial attention is paid to vegetable histology. The characteristic plant tissues are examined, and their arrangement is noted in roots, stems, leaves, fruits and seeds. The formation and occurrence of carbohydrates, glucosides, alkaloids, organic acids, resins, gums, gum-resins and oleo-resins are carefully studied.
Second semester, first year.

MR. BUTTERS.

III. Micro-Botany. Designed to furnish practical training in the use of the microscope, in the preparation of material for microscopic examination, including the use of micro-chemical reagents, and in the representation by drawings of all structures observed.
The work of this course is co-incident with that of II and III.

MR. BUTTERS

These courses occupy the equivalent of six and one-half hours a week throughout the junior year. They aim to give a comprehensive and scientific view of the vegetable kingdom to lay a broad foundation for the study of pharmacognosy, and throughout the course attention is frequently directed in the lectures to the wider relations of plants to one another and to animals, and to the discussion of the plant as a living unit, thus bringing before the class the fundamental problems of plant physiology and ecology.

The successful completion of the course in botany is prerequisite to the study of pharmacognosy.

The work of the three courses covers sixty-six hours lectures, and one hundred forty-four hours laboratory work, and is carried out by Mr. Butters under the direction of Professor MacMillan.

MATERIA MEDICA.

I. *Inorganic Materia Medica.*

II. *Organic Materia Medica.*

The work in inorganic and organic materia medica is based principally on the U. S. P., but unofficial and synthetic drugs are also studied. The course includes the study of the general characteristics of drugs and of their physiological action. Pharmacodynamics, including the study of the identity and quality of drugs, shares attention in the course of pharmacognosy.

Five hours weekly, second semester, first year.

DR. BRACKEN AND DR. CONDIT.

PHARMACOGNOSY.

I. *Crude Vegetable Drugs.*

The vegetable drugs of the United States Pharmacopœia are taken up in the following order: Roots, rhizomes, tubers and bulbs, woods, barks, leaves, herbs and flowers, fruits, seeds, plant exudations, resins, gum-resins, waxes and starches. Each drug is carefully examined, both macroscopically and microscopically. Students are also provided with specimens for home study. The lectures give, in compact form, the history and important features of each drug, with consideration of its importance to the pharmacist. The quizzes include careful drill on the constituents action and dose and official preparation of each drug considered. Identification receives careful attention and there are weekly tests of the student's ability. A short course is given in the microscopic examination of some of the more important alkaloids and glucosides, and of certain emulsions and inorganic salts, if time permits.

Text-books—Sayre's Organic Materia Medica and Pharmacognosy.

Reference Books—U. S. P., U. S. D., Flückiger and Handb. of Pharmacography, Tschirch's Atlas der Pharmacognosie, etc.

The drugs are considered in the following order:

Roots—Sarsaparilla (Mexican, Para and Honduras), senega, gentiana, taraxacum, pyrethrum, inula, lappa, apocynum, stillingia, sumbul, asclepias, phytolacca, althæa, belladonna, bryonia, calumba, rheum, glycyrrhiza (Spanish and Russian), ipecacuanha, pareira, krameria, rumex.

Rhizomes—Aspidium, zingiber (Jamaican, East Indian and African), calamus, veratrum viride, iris, cyperidium, convallaria, triticum, sanguinaria, geranium, podophyllum, valeriana, arnica, serpentaria, spigelia, hydrastis, caulophyllum, cimicifuga, leptandra, gelsemium, menispermum.

Tubers and Bulbs—Jalapa, aconitum, colchicum, scilla, allium.

Twigs and Woods—Quassia, hæmatoxylon, santalum rubrum, guaiacum, dulcamara.

Barks—Cinchona (Rubra et Flava), prunes virginiana, vilburnum prunifolium, viburnum opulus, rubus, quercus alba, granatum, aspidosperma, frangula, rhamnus purshiana, juglans, xanthoxylum, mezereum, gossypii radix, euonymus, quillaja, ulmus, sassafras, cascarilla, cinnamomum (Ceylon, Saigon and cassia).

Leaves and Leaflets—Pilocarpus, eucalyptus, uva ursi, senna (Alexandria and India), coca (Bolivian and Truxilla), belladonna, stramonium, hyoscyamus, tabacum, digitalis, matico, salvia, hamamelis, castanea, eriodictyon, chimaphila buchu (long and short), rhus toxicodendron.

Herbs and Flowers—Santonica, caryophyllus, sambucus, calendula, cusso, arnica, matricaria, anthemis, rosa gallica, rosa centifolia, crocus, zea, chondrus, cetraria, cannabis indica, pulsatilla, scoparius, eupatorium, grindelia, tanacetum, artemisia, absinthium, lobelia, mentha piperita, mentha viridis, melissa, hedeoma, marrubium, scutellaria, chirata, sabina, chelidonium.

Fruits—Humulus, piper (longum, nigrum et album), cubeba, pimenta, rhus glabra, capsicum, colocynthis, cassia fistula, chenopodium, illicium, cardamomum, vanilla, coriandrum, conium, anisum, carum, feniculum (Roman and German); macis, aurantii amari cortex, aurantii dulcis cortex, limonis cortex, prunum, tamarindus (East and West Indian), phytolacca, ficus, rubus.

Seeds—Physostigma, amygdala (dulcis et amara), pepo, myristica, sinapis (alba et nigra), nux vomica, staphisagria, ricinus, tiglium, stramonium.

Miscellaneous—Guarana, lactucarium, alce (Socotrina, Barbadosensis, et Capensis), catechu, kino (Malabar et Pallas), opium, elastica, manna, saccharum, saccharum lactis, mel, acacia, tragacantha, mastiche, gualiacum, benzoinum, cambogia, asafetida, ammoniacum, scammonium, myrrha, copaiba, terebinthina, terebinthina canadensis, resina, pix (Burgundica et liquida), styrax, balsamum peruvianum, balsamum toluatanum, camphora, thymol, menthol, ergota (Spanish and German), sasfras medulla, galla (Aleppo et Chinensis), gossypium purificatum, kamala, lupulinum, lycopodium, amyllum, cetaceum, cera, cantharis, cocculus, ichthyocolla, moschus, carbo animalis.

Besides the foregoing, a number of the more important unofficial drugs will also be discussed.

Eight hours weekly. Lectures, recitations and laboratory work. First and second semester, second year.

MR. BUTTERS.

II. Powdered Drugs.

This course consists of laboratory work and occasional lectures. The more important vegetable drugs are examined microscopically, in powdered form. Especial attention is paid to the identification of unknown powders, and to the detection of the various forms of sophistication to which powdered drugs are subject.

Text-book—Schneider's Powdered Vegetable Drugs.

Reference Books—Koch's Drogenpulver, Møller's Pharmacognostischer Atlas.

Three hours weekly, second semester, second year.

MR. BUTTERS.

ELEMENTARY PHYSIOLOGY AND ANATOMY.

- I. The work covers the study of the physiological properties of the cell, the nutritive media, the nervous mechanisms in general, muscular tissues, connective tissues and epithelial tissues. The subjects of anatomy and histology are touched upon sufficiently to lay the foundation for the proper understanding of physiological functions.

Special demonstrations are given upon animals and the living subject, illustrating the physiological functions in the muscular, nervous, vascular, respiratory and glandular systems, special attention being directed to the action of drugs and their effects upon the various systems.

Twenty-two lectures, first semester, first year.

DR. WILCOX.

- II. *Experimental Physiology.* (Post Graduate). Laboratory work and demonstrations. A study of physiologic apparatus, electric stimuli and methods of experimentation; the demonstration and performance of experiments which illustrate physiologic function in the muscular, nervous, vascular, respiratory and glandular systems; and the study of the cardiac areas, the heart and respiratory sounds, and of pulse tracings, including training in the use of sphygmograph, the stethoscope, phonendoscope, etc.

Six hours a week, second semester.

PROFESSOR BEARD, DRs. M. R. WILCOX AND G. D. HAGGARD.

THERAPEUTICS.

In this course drugs are studied in groups, as governed by their physiologic action, and the therapeutic features of such groups are described. Remedial measures other than those depending upon drugs, are fully considered.

Lectures and recitations, four hours a week, first semester, second year.
PROFESSOR BRACKEN.

MINERALOGY AND CRYSTALLOGRAPHY.

I. Mineralogy. A study of the minerals, ores and other sources of pharmaceutical chemicals.
 First semester, second year.

II. Crystallography. A study of the subject, with especial reference to the six systems.
 Second semester, second year.

MR. PARSONS.**MR. PARSONS.**

The work of I and II requires one hour weekly during second year.

BACTERIOLOGY.

Lectures and demonstrations. The general scope of bacteriology, the history of its development and the biological and chemical problems involved in the life history of bacteria will be dealt with. The classification of the various bacterial forms, the methods of isolation and culture and the composition and manufacture of culture media will be studied until a thorough knowledge of technique is acquired. General and special study of the various antiseptics, disinfectants and bactericidal substances and conditions will be undertaken.

Laboratory work, involving the making of their own culture media by the students, the study of bacteria in cultures and under the microscope, technique of staining and other methods, including observations of chemical and biological peculiarities, will be thoroughly carried out. Testing of various germicides—chemical and physical—and the use of bacteriological methods in the examination of drinking water will form an important part of the work. Eighteen hours per week during the last eight weeks of the second semester, second year.

PROFESSOR WESBROOK, DR. CHOWNING.

This course is optional with students of pharmacy at present, but may be made obligatory.

CLINICAL MICROSCOPY.

Instruction includes (a) the macroscopical study of urine, its colors, sediments, and finer chemical tests; (b) the microscopical study of urinary sediments, including blood, pus, epithelial cells, casts, etc.; (c) the macroscopical and microscopical study of sputum, including the study of sputa from cases of pneumonia, pulmonary tuberculosis, asthma, chronic bronchitis, etc.

Lectures and laboratory work. Eight hours weekly; last third, second semester, second year.

DR. GEORGE DOUGLAS HEAD.**PHARMACEUTICAL JURISPRUDENCE.**

A course of lectures in this subject is provided and seniors are required to attend. The lectures introduce the subjects of contracts, agency, commercial paper, insurance, and discuss the liability of retail and manufacturing pharmacists, etc.

Twelve lectures, second semester, second year.

PROFESSOR WULLINO.**MINNESOTA PHARMACY LAW.**

Several lectures fully elucidating the rights, duties, privileges and liabilities of pharmacists under the state law regulating the practice of pharmacy, are given by special lecturers near the close of the second year.

FIRST AIDS TO THE INJURED.

A series of lectures designed to qualify the pharmacist to administer upon emergency cases before the arrival of the physician.

Eight lectures, second semester, second year.

DR. MCCLLOUD.

TEXT AND REFERENCE BOOKS.

- Pharmacy:** U. S. Pharmacopœia, Remington's, Caspari's and Coblentz's Practice of Pharmacy, U. S. Dispensatory, National Dispensatory, Lyon's Pharmaceutical Assaying, Storer's Dictionary of Solubilities, Hager's Handbook of Pharmacy, Fluckiger and Hanbury's Pharmacographia, Era Formulary, American Pharm. Assoc. Proceedings, Berichte der Pharm. Gesellschaft, Peter's Ancient Pharmacy, National Formulary, Homeopathic Pharmacopœia, German Pharmacopœia, British, Pharmacopœia, Volatile Oils, Kremer's Gildemeister & Hoffman, Dieterich's Manual, Ruddiman's "Whys in Pharmacy."
- Pharmaceutical Chemistry:** Wulling, Sadtler and Trimble, Attfield, Simon, Hoffman and Power's Examination of Medical Chemicals, Schmidt, Elsner.
- General Chemistry:** Carel, Remsen's Inorganic, Prescott and Johnson's, Watts' Fownes, Gmelin's Handbook, Roscoe and Schorlemmer, Watts' Dictionary, Fresenius, Sadtler's Industrial Organic Chemistry, Schimpf's Quantitative Analysis, Schimpf's Qualitative Analysis.
- Prescriptions:** Ruddiman on Incompatibility, Gerrish's Prescription Writing, Rice's Posological Tables, Scoville on Compounding, MacEwen on Dispensing.
- Mathematics:** Sturmer, Oldberg's Pharm. Problems, Weights and Measures, Mathematical Chemistry, Helm and Morgan's Metric System by Hamblin Smith, Stevens, Arithmetic of Pharmacy.
- Materia Medica:** U. S. Pharmacopœia, Sayre, Bracken, Maisch, U. S. Dispensatory, National Dispensatory, Culbreth, Bently and Trimen's Medicinal Plants.
- Pharmacognosy:** Sayre, Maisch, Rusby and Jelfe, Fluckiger, Huseman and Hilger's Pflanzenstoffe, Base on Vegetable Microscopy, Hanbury's Pharmacographic and Science Papers, Moeller's Atlas, Tschirch and Oesterle's Anatomischer Atlas der Pharmacognosie, Herlant's Micrographies des Poudres Officinales, Schneider's Powd. Drugs.
- Botany:** Coulter, Strassburger Noll and Shimper's Bergen, Bastin, Vines, Bessey, Bentley, Gray, Cross and Bevan on Cellulose, Weisner's Rohrstoffe, Strassburger and Hillhouse, Geddes, Zimmerman on Botanical Microtechnique, Warming and Posser, Koch's Drogenpulver.
- Urinalysis.** Tyson, Flint, Von Jaksch on Clinical Diagnosis, Simon's Clinical Diagnosis, Beale's Chart, Rieder's Atlas of Urinary Sediments, Hoffman and Ultzmann, Peyer's Atlas, Boston's Clinical Diagnosis.
- Mineralogy:** Dana.
- Physiology:** Kirk, American Text-book of Physiology, Simon's Physiological Chemistry, Martin's Human Body, Foster, Howell's American Text-book of Physiology.
- Bacteriology:** Schenck, Sternberg, Fraenkel, Abbott.
- Toxicology:** Reese, Taylor on Poisons.
- Latin:** Robinson's Latin Grammar of Pharmacy, Jones, Harkness.
- Miscellaneous:** Gill's Oil Analysis, Mandel's Bio-Chemistry, Leffmann and Beam's Analysis of Milk, Wing's Milk and Its Products, Lassar and Cohn's Chemistry in Daily Life, Park's Hygiene and Sanitary Science, Stewart's Pocket Dose-Book.

THE WORK OF THE JUNIOR YEAR COVERS 1,139
HOURS, AS FOLLOWS:

Chemical Philosophy	Lectures & Recitations	64
Pharmaceutical Chemistry and Chemical Philosophy	Lectures	66
	Recitations	54
	Laboratory	238
Physiology and Anatomy	Lectures	22
Botany and Microscopy	Lectures	72
	Laboratory	144
The several junior courses constituting Chemistry	Lectures	60
	Recitations	15
	Laboratory	158

Qualitative Analysis	{	Lectures	12
		Recitations	6
		Laboratory	140
Materia Medica	Lectures & Recitations		64
Identification	Laboratory		16
Total —.....			1,139

If students do not bring credits for Latin and physics they will be required to take in addition:

Latin.....	72
Physics.....	72

THE WORK OF THE SENIOR YEAR COVERS 1,276
HOURS AS FOLLOWS:

Mineralogy and Crystallography	{	Lectures	36
Pharmacognosy		Lectures	54
		Laboratory	162
Identification		Laboratory	72
Organic Pharmacy	{	Lectures	48
		Recitations	36
		Laboratory	15
Organic Chemistry	{	Lectures	70
		Recitations	20
		Laboratory	10
Urinalysis Chemical	{	Lectures	70
		Recitations	32
		Laboratory	15
Toxicology	{	Lectures	60
		Recitations	20
		Laboratory	10
Chemistry of Hygiene	{	Lectures	20
		Recitations	10
		Laboratory	20
U. S. P. Quantitative Analysis	{	Laboratory	120
		Lectures	14
		Recitations	10

Pharmaceutical Laboratory includes U. S. P. Testing, Making of U. S. P. Salts, Assay, National Formulary Preparations and Homoeopathic Pharmacy.

	Lectures	54
Ditto	Laboratory	126
Dispensing	Lectures and Laboratory	96
Clinical Microscopy	Lectures and Laboratory	48
Jurisprudence	Lectures	12
Therapeutics	Lectures and Laboratory	40
First Aids	Lectures	8

Total 1,276

Special lectures from 6 to 12 during the year.

Bacteriology, optional.

JUNIOR LECTURE AND LABORATORY SCHEDULE.

FIRST SEMESTER 1906-1907

MONDAY:	8:30 to 10:30	Chemical Philosophy.
	10:30 to 11:30	Botany: Lecture.
	11:30 to 12:30	Physiology: Lecture.
	1:30 to 5:00	Botany: Laboratory.
TUESDAY:	9:30 to 10:30	Pharmaceutical Chemistry.
	10:30 to 11:30	Pharmacy: Quiz.
	11:30 to 12:30	Physiology: Lecture.
	1:30 to 5:00	Pharmacy: Laboratory.
WEDNESDAY:	8:30 to 12:30	Pharmacy: Laboratory.
	1:30 to 4:30	Botany: Laboratory.
THURSDAY:	8:30 to 9:30	Pharmacy: Quiz.
	9:30 to 10:30	Chemical Philosophy.
	10:30 to 12:30	Botany: Lecture.
	1:30 to 5:00	Pharmacy: Laboratory.
FRIDAY:	8:30 to 12:30	Pharmacy: Laboratory.
	1:30 to 4:30	Botany: Laboratory.

SECOND SEMESTER, 1906-1907

MONDAY:	8:30 to 9:30	Materia Medica.
	9:30 to 10:30	Pharmaceutical Chemistry.
	10:30 to 12:30	Pharmacy: Recitation.
	1:30 to 5:00	Chemistry: Laboratory.
TUESDAY:	9:30 to 10:30	Chemistry: Recitation.
	10:30 to 11:30	First Aids.
	11:30 to 12:30	Special Lecture.
	1:30 to 4:30	Chemistry: Laboratory.
	4:30 to 5:30	Latin.
WEDNESDAY:	8:30 to 9:30	Materia Medica.
	9:30 to 12:30	Botany: Laboratory.
	1:30 to 4:30	Chemistry: Laboratory.
THURSDAY:	8:30 to 9:30	Materia Medica.
	9:30 to 10:30	Pharmaceutical Chemistry.
	10:30 to 11:30	Botany: Lecture.
	11:30 to 12:30	Chemistry: Lecture.
	1:30 to 5:00	Chemistry: Laboratory.
FRIDAY:	8:30 to 10:30	Materia Medica.
	10:30 to 11:30	Chemistry: Lecture.
	11:30 to 12:30	Botany: Lecture.
	1:30 to 4:30	Chemistry: Laboratory.
	4:30 to 5:30	Latin.

SENIOR LECTURE AND LABORATORY SCHEDULE

FIRST SEMESTER 1906-1907

MONDAY:	8:30 to 9:30	Therapeutics.
	9:30 to 10:30	Pharmacognosy: Lecture.
	10:30 to 11:30	Identification.
	11:30 to 12:30	Organic Chemistry: Lecture.
	1:30 to 5:00	Organic Chemistry: Laboratory.
TUESDAY:	8:30 to 10:30	Pharmacognosy: Laboratory.
	10:30 to 11:30	Crystallography and Mineralogy.
	11:30 to 12:30	Organic Chemistry: Lecture.
	1:30 to 5:00	Organic Chemistry: Laboratory.
WEDNESDAY:	8:30 to 9:30	Organic Pharmacy: Lecture.
	9:30 to 10:30	Therapeutics.
	10:30 to 12:30	Pharmacognosy: Laboratory.
	1:30 to 5:00	Organic Chemistry: Laboratory.
THURSDAY:	8:30 to 10:30	Organic Pharmacy: Lecture.
	10:30 to 11:30	Crystallography and Mineralogy.
	1:30 to 5:00	Organic Chemistry: Laboratory.
FRIDAY:	8:30 to 9:30	Therapeutics.
	9:30 to 12:30	Pharmacognosy: Laboratory.
	1:30 to 5:00	Organic Chemistry: Laboratory.

SECOND SEMESTER 1906-1907

MONDAY:	8:30 to 12:30	Pharmaceutical Laboratory.
	1:30 to 5:00	Quantitative Analysis.
TUESDAY:	8:30 to 12:30	Pharmaceutical Laboratory.
	1:30 to 5:00	Quantitative Analysis.
WEDNESDAY:	8:30 to 12:30	Dispensing.
	1:30 to 4:30	Pharmacognosy Laboratory.
THURSDAY:	8:30 to 12:30	Dispensing.
	1:30 to 5:00	Quantitative Analysis.
FRIDAY:	9:30 to 10:30	Pharmacognosy Lecture.
	10:30 to 12:30	Organic Pharmacy.
	1:30 to 5:00	Quantitative Analysis.
SATURDAY:	9:00 to 12:00	Pharmaceutical Laboratory is open for the benefit of students who may be behind in any of their work.

Pharmaceutical laboratory work includes U. S. P. Testing, National Formulary Preparations, Manufacture of U. S. P. Salts, Assay, Homeopathic Pharmacy, etc.

Quantitative Analysis includes gravimetric, volumetric and gasometric estimation.

Quantitative Analysis is completed about the middle of April, when the work in Clinical Microscopy and Jurisprudence takes its place.

ENTRANCE REQUIREMENTS.

A.—To the Two-Year Course.

While nearly all students enrolled in this college are graduates of full four-year high school courses, such a training prior to entrance is not obligatory at the present time. The requirements, however, are being raised gradually in such a way that beginning with the school year 1909 they shall be a full high school preparation or an equivalent, *i. e.*, a preparation in six one-year credits in addition to English, algebra, geometry, physics and Latin as per list in III.

- I. *Minimum requirements applying to all candidates seeking admission to the 1906-'07 course.* Applicants may be admitted without examination if they bring certificates of graduation from, or standing in, institutions of the collegiate grade or present other credentials showing that they have successfully completed the branches of study embraced in a full four-year high school course, or an equivalent, provided that among the branches completed are:

English, two years, including the principles of composition and practice in written expression.

Algebra, one year, elementary, up to beginning of higher algebra.

Geometry, one year, elementary.

Physics, one year, elementary.

Latin, two years: Grammar, one year, Caesar, (four books), one year.

- II. Other applicants must pass examinations in the branches above specified, *i. e.*, in English, algebra, geometry, physics and Latin, or present satisfactory evidence of having completed these branches, for which substitutes cannot be accepted.

Students will be allowed to carry not more than one condition which, however, must be removed before the final examinations in the first year subjects.

- III. *Minimum requirements applying to candidates seeking admission to courses beginning respectively 1907, 1908, and 1909.*

Applicants for admission in 1907, 1908 and 1909, respectively, must present, in addition to the five subjects enumerated in I., evidences of preparation in respectively two, four and six one-year credits chosen from the following list or their equivalents:

Latin	{ Cicero: One year.
	{ Virgil: One year.
Greek	{ Grammar: One year.
	{ Anabasis: One year.

German	{	Grammar: One year.
	}	Literature: One year.
French	{	Grammar: One year.
	}	Literature: One year.
Spanish	{	Grammar: One year.
	}	Literature: One year.
English	{	Latin element: One year.
	}	Literature: One year.
History	{	Greek and Roman: Half year.
		English: Half year.
		Medieval: Half year.
		Modern: Half year.
	}	Senior American: Half year.
Civics		Half year.
Political Economy		Half year.
Chemistry		Half year.
Botany		Half year or one year.
Zoology		Half year.
Astronomy		Half year.
Geology		Half year.
Solid Geometry		Half year.
Higher Algebra		Half year.
Physiography		Half year.
Commercial Geography		Half year.

Students may enter with two one-year conditions or three half-year conditions.

Applicants whose preparatory course of study has not conformed precisely to the requirements above enumerated will be allowed to offer, in lieu of a portion of these requirements, equivalent preparation in similar branches of study; and if they show, by examination, or by other evidence, that their preparation has been substantially equivalent, such branches will be accepted as substitutes for those omitted.

The examinations for entrance are conducted by the faculty of the college of pharmacy, in the pharmacognosy rooms, beginning at 9:00 a. m., on Tuesday, September 18, 1906. Lecture work begins as soon as possible after the examinations, usually the following day.

IV. All applicants are required to furnish a certificate of good moral character.

B.—To the Three-Year Course.

The minimum requirements for admission to the three-year course beginning in 1906, and to that beginning in 1907, are the same as those for admission to the two-year course II., with the exception that students may carry as conditions not more than three of the entrance subjects among which English cannot be. Students must pursue the branches

in which they are conditioned during their first year and pass examinations in them or present evidence of having satisfactorily completed the branches. The subjects are not taught at the college, but may be taken at the Academy near by, or at the city high schools or with private tutors. The University Y. M. C. A. usually establishes courses for the benefit of students conditioned in entrance branches.

For the school year 1908-09 applicants cannot enter with more than two conditions. After that year the requirements for entrance upon the three-year course will be the same as those for admission to the regular two-year course, *i. e.*, a full high school preparation with the privilege of two conditions.

LIBRARY.

Students have free access to all the library facilities of the University and of the city. The medical and pharmaceutical library contains, in addition to about twenty-four hundred volumes of a technical nature, the more important American and European medical and pharmaceutical periodicals.

LENGTH OF COURSE.

The complete course extends over two years of nine months each. Students may arrange their work so as to take the course in three years, without additional expense to them. It is quite possible that three years' attendance will be required of students in this college in the near future.

The fifteenth annual course begins Tuesday, September 11, 1906, at 9:00 a. m., at which time registration commences in the Dean's office. Registration closes on Tuesday, September 18. Regular work begins the following day.

The college year is divided into two semesters; the second beginning February 5, 1907.

REGISTRATION.

All applications for admission to the regular courses must present to the Dean not later than September 18, their school or high school certificates, diplomas or such other credentials as they may wish to offer toward meeting in whole or in part the entrance requirements. If these are found satisfactory the applicant will register in the office of the University registrar, who will issue a card to the University accountant to whom the applicant will pay the tuition and breakage fees and microscope rental and receive receipts therefor. Registration is completed by depositing these receipts in the office of the Dean. The student is then classified.

PROFESSIONAL EXAMINATIONS.

Examinations are held at the end of the regular school year and during the last week of the first semester, and are supplementary to the written recitations and quizzes that are held at frequent intervals during the term, and with them form the basis of final determination of fitness for promotion or graduation. Students are rated throughout the year, and all students who have a standing of ninety per cent, or more, in certain of the branches, may not be required to take the final examination in those branches.

Students are not required to write graduating theses, but instead, they keep complete records of all their laboratory work. The records are to be kept in substantially bound books, to be approved by the faculty. The respective professors call for the records for inspection and rating once a month or oftener. Duplicates of records are to be furnished the college by the students. The college provides the paper.

ATTENDANCE.

In order to become eligible for final examinations, students are required to attend at least four-fifths of the lectures in each course. This rule is not intended for the benefit of those who seek admission after the opening of the college year, but is designed to cover cases of sickness or unavoidable absence. It does not apply to laboratory courses which must be taken in full and must be entered during the first week in which they begin.

CONDITIONS.

Students having conditions in more than one major or in more than two minor subjects of the first year, cannot enter upon the second year's work. All entrance conditions must be removed before the next spring examination. Candidates for graduation must have removed all conditions before entering upon the second semester of the graduating year.

Condition examinations are held during the first week of the course in September. The dates are posted in June. Conditioned students are required to inform themselves as to these dates as soon as they learn that they are conditioned, as no other notice is given.

All who carry a condition and fail to remove it within one year will be charged an extra examination fee.

Students who carry a condition into a succeeding year may find a conflict of lecture or laboratory hours. In such cases they are to give preference to the lower course.

STANDING.

The standing of students is determined by the results of recitations, written examinations, laboratory work and attendance. It is indicated by the terms "passed," "conditioned," "incomplete," or "failed." Conditions may be removed as indicated above. Incomplete work must be made up before the final examinations of the following year.

ADVANCED STANDING.

Applicants for advanced standing must pass the entrance examinations or present the usual equivalents. They must furnish satisfactory evidence of time spent and subjects covered in previous professional studies, and must present themselves at the above date and pass the examinations of all departments in which they wish to be exempt, if such examinations are deemed necessary by the professors in charge of the various departments. Students will not be permitted to substitute private work in any branch for the regular course work.

DEGREE.

This college confers the degree of pharmaceutical chemist, (Ph. C.), upon the graduates of the regular course.

REQUIREMENTS FOR GRADUATION.

Regular attendance at lectures, recitations and laboratory exercises is required. Students will not be permitted to present themselves for final examination unless they have been in attendance upon at least seven-eighths of the required number of exercises.

Every person upon whom the degree is conferred must be of good moral character, and must be at least twenty-one years old; must have attended two full lecture and laboratory courses, the last at this college, and must have passed a successful examination in the subjects required for graduation.

Drug store experience is not a requirement for graduation.

Those who fail to appear for examination after having paid their diploma fee, or those who do not pass satisfactorily, will be permitted to present themselves at any subsequent examination, upon payment of an additional fee of five dollars, and complying with all other requirements.

GRADUATE COURSE.

In addition to the regular course this college offers two graduate courses, the first continuing through one college year and leading to the

degree of "master of pharmacy," and the second continuing through an additional year or longer, and leading to the degree of "doctor of pharmacy." The first graduate course, the one leading to the master's degree, is now in operation. It is intended that the curriculum shall include higher pharmaceutical chemistry, pharmaceutical assaying, higher organic chemistry, proximate and ultimate analysis, chemistry of food, spectroscopic work, therapeutics, and bacteriology, and a thesis of at least 3,000 words, embodying the results of original work, but this curriculum may be changed by the faculty if occasion or experience require.

The requirements for admission are a diploma from a Minnesota high school of the first grade, or an equivalent; a diploma from a college of pharmacy whose curriculum, extent and kind of work and length of under-graduate course are equal to those of the under-graduate work of this college; an acquaintance with either German or French sufficient to enable the student to read and understand the scientific literature of those languages, and a certificate of registration as pharmacist from any state board of pharmacy. The fees for this course will be seventy-five dollars, and, upon graduation, an additional fee of ten dollars for diploma. The rules relating to damage, waste and breakage in laboratories are the same as those applying to the undergraduate course.

The course leading to the doctor's degree will begin as soon as there are sufficient applicants.

BREAKAGE AND LOSS.

In each laboratory course the student will be assigned a certain amount of apparatus and material, for which he will give receipt. At the end of each course, if such apparatus and material are restored in good condition, this receipt will be returned to him.

All apparatus lost or damaged will be charged to him, and must be paid for before he can receive credits for his course, or take his annual examinations.

CAUTION FEE.

A deposit of ten dollars will be made with the accountant each year, by every student, at the time of enrollment as a caution fee. This fee is intended to cover the cost of unnecessary damage to or in the college buildings and of breakage and loss of laboratory apparatus and materials. It will be returned to the student at the close of each year, minus the cost of articles assigned to him, that are not returned in good condition, or of damage to college property for which he is individually responsible. If responsibility for such damage cannot be individually fixed, a pro rata charge upon all students will be made.

The College of Pharmacy

GENERAL STATEMENT.

Those who do not pass the entrance examinations, may enter and complete their course in three years, provided they pursue the subjects required for admission, in addition to the professional work that may be assigned to them, and pass their entrance examinations, before the end of the first year. There are a number of preparatory schools in the neighborhood of the University, where the subjects required for admission may be pursued.

Students are permitted to use their own crude drugs for the making of preparations, provided such material is approved by the Dean of the college as suitable to demonstrate the lesson in hand. Finished products from such material, if of satisfactory quality, are at the disposal of the student, unless made with the tax-free alcohol belonging to the college.

Absence will not be excused, unless satisfactory reasons are given to the professor in charge. Habitual absence without a satisfactory excuse, continued indifference to study, or persistently poor scholarship may subject the student to temporary or permanent suspension. Students are earnestly requested to be present at the beginning of the school year. Special students, however, may enter at any time; they will not be rated on their work, nor will they be examined unless they make special request therefor. Any of the facilities for work in the University are open to the students of this college, subject to the approval of the Dean. Opportunity is afforded to do advanced work in all branches. Text-books may be obtained after coming to the University.

Rooms and board convenient to the college can be obtained at prices ranging from \$3.00 to \$5.00 per week, according to accommodations and furnished rooms without board, from \$5.00 to \$10.00, and unfurnished rooms from \$4.00 to \$7.00 per month.

A list of rooms and boarding places is kept by the secretary of the University Y. M. C. A., to whom inquiries or applications may be addressed.

There are no other fees in the regular course. Fees are payable at the time of registration. Those desiring to take special work will be required to pay fifteen dollars a subject in the didactic courses and twenty-five dollars in the laboratory courses.

Students will be charged for laboratory material if used unreasonably. At the end of laboratory courses students will be required to pay for breakage and damage to utensils in their care. If a student is careful this charge need not amount to more than two or three dollars. Students are to provide themselves with a designated set of metric weights, a set of apothecary's weights and steel spatulas. The expense of these is within three dollars. Students using platinum crucibles are charged for same. Upon the return of the crucible in the original condition the charge is canceled; if the crucible is in any wise damaged the full value is collected from the

student. A rental of two dollars per college year is charged for the use of a microscope. All money is payable to the accountant of the University, who will give receipts which must be deposited in the Dean's office.

Fees will not be returned, except in case of discontinuance for sufficient reason before the student has been assigned to a place in the laboratory.

STATE BOARD OF PHARMACY.

The Board meets at the college four times each year. For information concerning the Board address the Secretary, Mr. Chas. J. Moos, 502 Bank of Commerce Building, Minneapolis, Minn.

COLLEGE OF PHARMACY ALUMNI ASSOCIATION.

The Alumni Association meets annually in the college building the day before commencement, at 3 p. m. Every member of the Association is urgently requested to report change of address to the secretary.

COMMUNICATIONS.

Address communications to the Dean, Professor Frederick J. Wulling, University of Minnesota, Minneapolis, Minn.

Students

POST GRADUATE

—Todd, Alice M., Minneapolis

SENIOR PHARMACISTS, 36.

Aker, Emil C., Montevideo
Baer, H. C., Kenyon
Barnett, H. J., Wheatland
Bockhoven, W. H., Clark, S. D.
Bowman, Fred M., Brown Valley
Carlson, E. G., Willmar
Caton, Charlotte E., Minneapolis
Cleveland, Zina, Northfield
Cutting, Joseph P., Sleepy Eye
Day, Benjamin H., St. Paul
Desmond, Emmet R., Rushford
Dretchko, Alvin LeRoy, Winthrop
Fitch, Frederick Chas., Hurley, S. D.
Frise, Dottie Curtis, Minneapolis
Granberg, Leonard, Minneapolis
Graves, Chas. Wilbur, Warsaw
Handy, John Abner, Good Thunder
Hanscom, George A., Willmar

Kelly, John V., St. Paul
Kennedy, Edward Philip, Marshall
Kermot, George Thrall, Elk River
Ketcham, Koyla Myrle, Herman
Kurth, Asa Fred, Hendricks
Larson, Ned LeRoy, Atwater
Madden, Leo Daniel, Rochester
Maurier, David L., Brainerd
North, Robert, Hudson, Wis.
Peterson, Henry Ellis, Litchfield
Peterson, Sumner Amos, Atwater
—Rosenthal, Fannie, Java, S. D.
Sweet, LeRoy, River Falls, Wis.
Schreiber, Norman C., Red Lake Falls
—Smith, Carolyn H., Minneapolis.
Trench, William Maurice, Dennison
Vatter, Frank Xavier, Sherburne
Van Campen, Harry Alton,
Cannon Falls

JUNIOR PHARMACISTS, 43.

Allen, A. A., Minneapolis
Allen, C. Herbert, Minneapolis
Anstine, George C., St. Paul
—Austin, Albertha J., Milbank, S. D.
Baukol, Harris, Starbuck
Blosmo, Oscar, Menominee, Wis.
Bohland, Carl P., St. Paul
Bolton, John Foster, Plainview
Brede, Otto H., Minneapolis
Carlson, Arthur E., Willmar
Deterling, Bernhard A., Gaylord
DeWitz, Frank A., Rochester
Egbert, Henry G., Winona
Engebretson, Engelbert, Hendricks
Flemming, J. M., Tracy
Gronvold, Bernt O., Kenyon
Gunderson, A. Joseph, Pelican Rapids
Hanson, Wm., Sleepy Eye
Holmes, Robie E., Billings, Montana
Holt, Dennis H., Rochester
Kellam, Ansel B., Heron Lake
Kelly, Chas. Francis, Webster, S. D.

Klovstad, Thomas, Milan
Knapp, John A., River Falls
Lafans, Arthur R., Minneapolis
Lovdahl, Arthur E., Park Rapids
McGovern, Thos. B., Minneapolis
Morrill, Rae M., Champlin
Murnane, George W., St. Paul
Nott, Ray James, Brownton
Olverson, Oscar A., Clark, S. D.
Quick, F. R., St. Paul
Schulte, Joe F., Henderson
—Snyder, Bessie E., Hector
Steinhilber, Irvin H., Minneapolis
Stover, Chas. E., Minneapolis
Thompson, Charles A., Buffalo
Spengler, Wm., St. Paul
Turton, Lloyd E., Alexandria
Weber, George C., Rochester
Welch, Leo S., Glencoe
Winter, W. M., St. Paul
—Yorke, Georgia M., Minneapolis



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1907/08

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OF THE
UNIVERSITY OF ILLINOIS

Volume X. No. 3.



April, 20, 1907.

The University of Minnesota Bulletin

COLLEGE OF PHARMACY

1907-1908

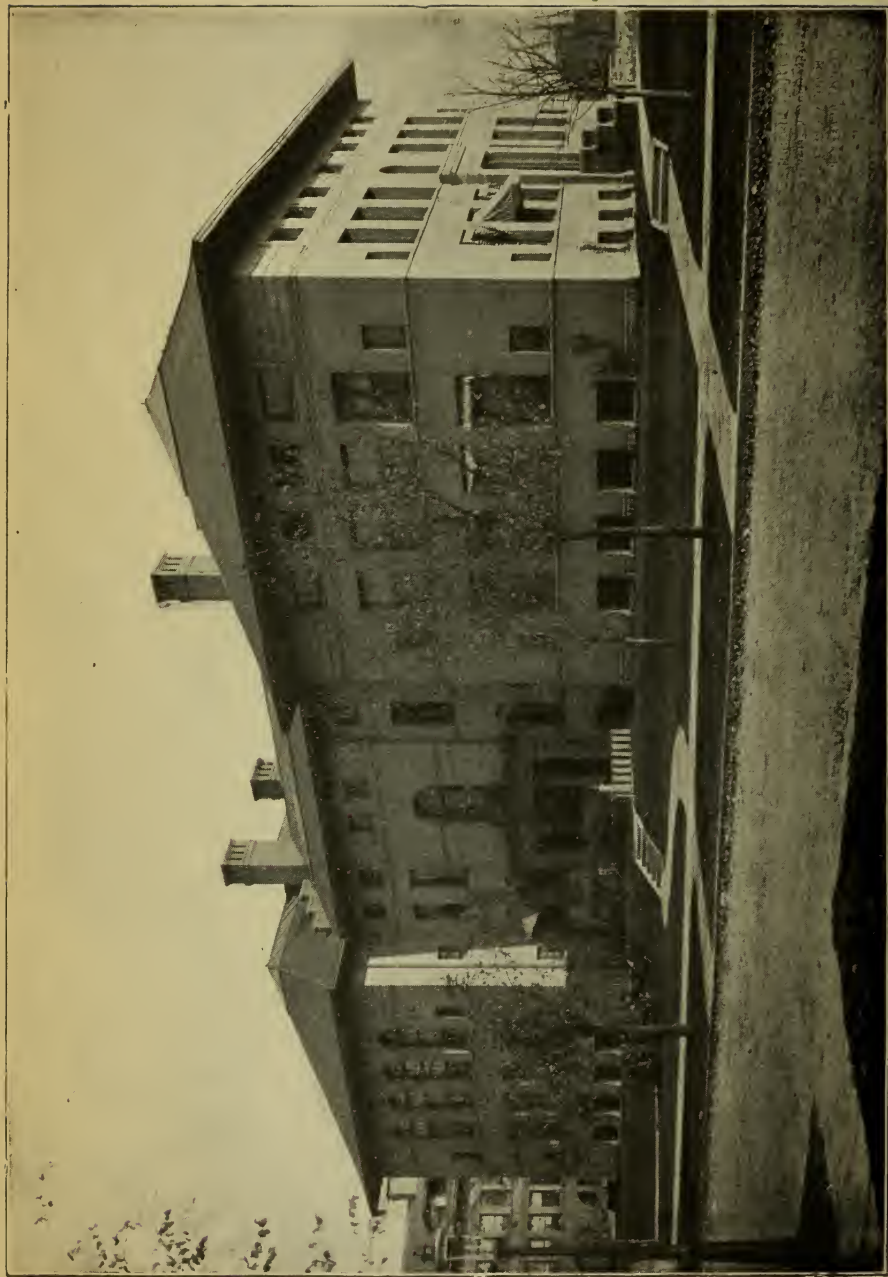
Entered at the Postoffice
in Minneapolis as second-class matter
MINNEAPOLIS, MINN.

The University Catalogues are published by authority of the Board of Regents, as a regular series of Bulletins. The number issued each year varies from twelve to fourteen. Bulletins will be sent gratuitously, postage paid to all persons who apply for them. In calling for bulletins, please state department of the University concerning which you desire information. The full catalogue will be sent only upon receipt of ten cents to pay postage. Address,

THE REGISTRAR,

The University of Minnesota,
Minneapolis, Minnesota.

LIBRARY
OF THE
UNIVERSITY OF ILLINOIS.



Laboratory of Histology and Embryology.

MEDICAL SCIENCE BUILDING.

Laboratory of Physiology.

College Training for Pharmacists.

The recognition of the need of substantial college training for pharmacists finds expression in many ways. In New York, Pennsylvania, Hawaii, Wisconsin and Ohio such training is obligatory either by law or by rule of the Boards of Pharmacy. In a number of other states credit is given for college work. In Minnesota graduates from recognized colleges need to have only two years of practical experience, while all others must have four years of drug store experience before they become eligible for examination by the State Board of Pharmacy for full license to practice in Minnesota. At the Joint Conference of the National Association of Boards of Pharmacy and the American Conference of Pharmaceutical Faculties, held at Indianapolis, Ind., in September, 1906, the following resolution was adopted:

"Special education for the practice of pharmacy is in this age a necessity and should as rapidly as possible be made compulsory and the rules of the Boards of Pharmacy are such as to promote and encourage it in all practicable ways. The special pharmaceutical education should include substantial laboratory courses."

The training advocated by these two most representative bodies and by the American Pharmaceutical Association can be obtained only at colleges or schools of pharmacy of recognized standing. It is admitted that the State of Minnesota through its University College of Pharmacy is affording instruction of the most approved kind.

In the organization of this college the Board of Regents and the faculty have aimed to secure the co-operation of the pharmacists of the state. The character of instruction is of high order and every effort is made to comply with the demands of the profession in the Northwest, or elsewhere, in the maintenance of a course of instruction of the highest grade. The college is located on the University campus, in the Medical Science Laboratory building, and is one of the colleges of the department of medicine, but is distinct in the government of its affairs. The building and laboratories are on a par with the best, and their equipment is complete.

The work of the college, as outlined in the following pages, is conducted by means of lectures, recitations and laboratory exercises. Students find their time fully occupied. Those who feel unable to complete the work in two years may divide it in a manner to complete it in three years. Practising pharmacists who desire to take certain branches of study may avail themselves of any of the college facilities.

College of Pharmacy Calendar.

1907-1908.

September	10	Registration begins.
September	17	Entrance examinations. Registration completed. Classification of students.
September	18.	Classes called for regular work.
November	28.	Thanksgiving Day. Holiday. (Recess three days.)
December	21.	Holiday recess begins. (No classes.)
December	25.	Christmas Day.
January	7.	Work resumed.
January	27.	First semester examinations begin.
February	1.	First semester examinations end.
February	4.	Second semester begins.
February	12.	Lincoln's Birthday. Holiday.
February	22.	Washington's Birthday. Holiday.
April	17	Legal Holiday. (Recess two days.)
May	31.	Second semester ends.
June	2.	Second semester and final examinations begin.

COMMENCEMENT WEEK.

SUNDAY,	June 7.	Baccalaureate service.
MONDAY,	June 8.	Senior class exercises.
TUESDAY,	June 9.	Senior promenade.
WEDNESDAY,	June 10.	Alumni day. Meeting at 3 p. m. at college.
THURSDAY,	June 11.	Commencement day—the thirty-sixth annual commencement.
FRIDAY,	June 12.	Summer vacation begins.

The University

THE UNIVERSITY OF MINNESOTA comprises the following named schools, colleges and departments:

THE COLLEGE OF SCIENCE, LITERATURE AND THE ARTS

THE COLLEGE OF ENGINEERING AND THE MECHANIC ARTS

THE DEPARTMENT OF AGRICULTURE, including—

The College of Agriculture

The School of Agriculture

Short Course for Farmers

The Dairy School

The Crookston School of Agriculture

THE COLLEGE OF LAW

THE COLLEGE OF MEDICINE AND SURGERY

THE COLLEGE OF HOMEOPATHIC MEDICINE AND SURGERY

THE COLLEGE OF DENTISTRY

THE COLLEGE OF PHARMACY

THE SCHOOL OF MINES

THE SCHOOL OF ANALYTICAL AND APPLIED CHEMISTRY

THE COLLEGE OF EDUCATION

THE GRADUATE SCHOOL

The Regents of the University have entrusted to their charge

THE EXPERIMENT STATIONS, including—

The Main Station at St. Anthony Park

The Sub-Station at Crookston

The Sub-Station at Grand Rapids

THE GEOLOGICAL AND NATURAL HISTORY SURVEY

Bulletins of these schools, colleges and departments may be obtained upon application to the University Registrar.

The Board of Regents

CYRUS NORTHROP, LL. D., MINNEAPOLIS	<i>Ex-Officio</i>
The President of the University	
The HON. JAMES T. WYMAN, MINNEAPOLIS	1908
The President of the Board	
The HON. JOHN A. JOHNSON, ST. PETER	<i>Ex-Officio</i>
The Governor of the State	
The HON. JOHN W. OLSEN, ALBERT LEA	<i>Ex-Officio</i>
The State Superintendent of Public Instruction	
The HON. S. G. COMSTOCK, MOORHEAD	1908
The HON. THOMAS WILSON, ST. PAUL	1909
The HON. B. F. NELSON, MINNEAPOLIS	1909
The HON. A. E. RICE, WILLMAR	1909
The HON. EUGENE W. RANDALL, MORRIS	1910
The HON. DANIEL R. NOYES, ST. PAUL	1910
The HON. S. M. OWEN, MINNEAPOLIS	1913
The HON. W. J. MAYO, ROCHESTER	1913

C. D. DECKER, AUSTIN
 Secretary of the Board.

Executive Officers

THE UNIVERSITY

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ERNEST B. PIERCE, B. A., *Registrar*

JAMES T. GEROULD, B. A., *Librarian*

C. D. DECKER, *Purchasing Agent*

THE COLLEGES

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WILLIAM M. LIGGETT, *Dean and Director of the Department of Agriculture*

WILLIAM S. PATTEE, LL. D., *Dean of the College of Law*

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EUGENE L. MANN, B.A., M.D., *Dean of the College of Homeopathic Medicine and Surgery*

ALFRED OWRE, D.M.D., M.D., *Dean of the College of Dentistry*

FREDERICK J. WULLING, Ph.D., LL.M., *Dean of the College of Pharmacy*

WILLIAM R. APPLEBY, M.A., *Dean of the School of Mines*

GEORGE B. FRANKFORTER, Ph.D., *Dean of the School of Chemistry*

GEORGE F. JAMES, Ph.D., *Dean of the School of Education*

HENRY T. EDDY, C.E., Ph.D., LL.D., *Dean of the Graduate School*

University Council Committees

The University Auditing Committee

Professors Anderson, Sigerfoos, Springer, Fletcher, Owre

The Committee on Athletics

Professors Paige, Wesbrook, Brooke, James, Harding

The Committee on Grounds and Sanitation

Professors Wesbrook, Reynolds, Bass, Flather, Sidener

The Committee on Catalogue, Programs and Courses of Study

Professors Frankforter, McVey, Pattee, Jones, Snyder, Appleby, Lee

The Press Committee

Professors Schaper, Erdmann, Constant, Snyder, James

The Committee on Commencement and other University Functions

Professors Nachtrieb, Pattee, Eddy, Lee, Owre, Washburn, Schlenker

The Committee on Student Entertainments and Social Affairs

Professors Frankforter, Pike, White (S. M.), Bass, Willis

The Committee on University Relations to other Institutions of Higher Learning

Professors Downey, Folwell, Green, Lee

The Committee on University Extension and University Lectures

Professors James, Schlenker, Mann, Haecker, McVey

The Committee on the Library

Professors Eddy, Downey, Jones (D. P.), West, Lee, Jones (F. S.), Fletcher

The College of Pharmacy.

CYRUS NORTHROP, LL.D., *President.*

FREDERICK JOHN WULLING, Ph.G., Phm.D., LL.M., etc., *Dean: Professor of Pharmacology, Pharmaceutical Chemistry and Pharmaceutical Jurisprudence.*

HENRY MARTYN BRACKEN, M.D., *Professor of Materia Medica.*
.....*Professor of Pharmacognosy.*

H. C. CAREL, B.S., *Assistant Professor of Chemistry.*

FREDERICK K. BUTTERS, M.S., *Instructor in Botany and Practical Pharmacognosy.*

FRANK FAIRCHILD WESBROOK, M.A., M.D., C.M., *Professor of Bacteriology.*

GEORGE B. FRANKFORTER, M.A., Ph. D., *Professor of General and Organic Chemistry.*

CHAS. F. SIDENER, B.S., *Professor of General Chemistry.*

GEORGE DOUGLAS HEAD, B.S., M.D., *Instructor in Clinical Microscopy.*

RICHARD OLDING BEARD, M.D., *Professor of Physiology.*

M. RUSSELL WILCOX, M.D., *Demonstrator in Physiology.*

J. P. SEDGWICK, M.D., *Assistant in Physiology.*
.....*Instructor in Medical and Pharmaceutical Latin.*

FRANK F. GROUT, B.S., *Instructor in Mineralogy.*

GUSTAV BACHMAN, Phm.D., *Instructor in Pharmacy and Laboratory Assistant.*

I. DERBY, B.S., *Assistant Professor of Chemistry.*

W. H. CONDIT, M. D., *Instructor in Materia Medica.*

C. N. MCCLOUD, Phm.D., M.D., *Lecturer on First Aids to the Injured.*

JOHN A. HANDY, Ph.C., *Assistant in Laboratory Chemistry.*

OSCAR BLOSMO, Ph.C., *Assistant in Dispensing.*

BERNT O. GRONVOLD, *Laboratory Assistant.*

CALENDAR FOR 1907-1908.

1907

1908

JULY

S.	M.	T.	W.	T.	F.	S.
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JANUARY

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FEBRUARY

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JUNE

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Courses of Instruction.

First Year. History of pharmacy; metrology; physics of pharmacy, pharmaceutical processes; pharmacopœial preparations; mathematics of pharmacy; pharmacy quiz; identification; chemical philosophy; pharmaceutical chemistry of the non-metals and their preparations; the chemistry of the elements. Pharmacopœial inorganic salts and their official preparations; qualitative analysis; identification of salts; comparative morphology of the cryptogams; morphology and anatomy of the higher seed plants; micro-botany; materia medica, organic and inorganic; physiology and anatomy.

Second Year. Carbon compounds; toxicological chemistry; uranalysis; chemistry of hygiene; classification of organic compounds; U. S. P. organic compounds and their preparation; U. S. P. testing; quantitative analysis; manufacture of official salts; National Formulary; incompatibility; dispensing; pharmaceutical assay; synthetic remedies; homeopathic pharmacy; identification of salts; pharmacognosy; powdered drugs; therapeutics; mineralogy and crystallography; bacteriology (optional); clinical microscopy; pharmaceutical jurisprudence; Minnesota pharmacy law; first aids to the injured.

Third Year. Students taking three years to do the work of the regular two-year course, will divide the work in an equitable way subject to the approval of the Dean. Students are urged to devote three years to the completion of the course.

PHARMACY.

- I. History of Pharmacy,** including Pharmacopœias, Dispensatories, textbooks, works of reference. History of the U. S. Pharmacopœia through all its revisions.
Lectures, recitations and laboratory work, first semester, first year.
PROFESSOR WULLING.
- II. Metrology.** Weights and measures, including metric system; balances—construction, varieties, methods of weighing; specific gravity in detail; specific volume, alligation, etc.
Lectures, recitations and laboratory work, first semester, first year.
PROFESSOR WULLING, MR. BACHMAN AND ASSISTANT.
- III. The Physics of Pharmacy.** Students are required to have had elementary physics before entering. This course covers a review and more extended elucidation of such divisions of physics as apply to pharmaceutical processes. Special attention is paid to heat.
Specific heat; thermometers—the various scales, testing and comparing thermometers; combustion of solids, liquids and gases in various kinds of furnaces, stoves and burners; application of heat in drying ovens, steam, hot-air and water ovens; drying closets, dessicators, blow-pipes, crucibles; baths for controlling and equalizing heat; water-salt-oil-glycerine-paraffin-hot air baths; evaporation—spontaneous, rapid, slow, in vacuo; ebullition—boiling points, fusion; sublimation, calcination, dehydration, torrefaction, roasting, reduction, oxidation; carbonization, deflagration, ignition, etc.
Solution—pharmaceutical, simple, chemical, saturated; circulatory displacement.
Dialysis—construction of dialyser, osmosis, endosmosis, exosmosis; crystalloids and colloids, etc.
Lectures, recitations and laboratory work, first semester, first year.
PROFESSOR WULLING, MR. BACHMAN AND ASSISTANT.

- IV. *Pharmaceutical Processes.* The processes not taken up in III, constitute the subjects of this course. In part they are: drug grinding and powdering; comminution; contusion; trituration; sifting; elutriation; levigation; lixiviation; filtration—filtering media, filtration of solutions, oils, syrups, rapid filtration, filtration in vacuo, hot filtration, colation; washing—displacement, continuous; decantation—the syphon and its uses; precipitation—methods, vessels, separating, drying, weighing; granulation—granular effervescent salts; desiccation; exsiccation; crystallization—water of crystallization deliquescence, efflorescence, methods of obtaining crystals, collecting, draining, washing, drying crystals, fractional crystallization; distillation—stills, simple, fractional, destructive; extraction; maceration; expression; percolation—history, theories, percolators, exhaustion, repercolation, continuous percolation, fractional percolation; clarification; decolorization.

Lectures and laboratory work, first semester, first year.

PROFESSOR WULLING, MR. BACHMAN AND ASSISTANT.

The work of I., II., III. and IV. aggregates: Lectures, 72 hours; recitations, 54 hours; laboratory work, 238 hours.

- V. *Pharmacopœial Preparations.* This course includes the study and preparation of official bodies for which the U. S. P. gives formulæ and processes, and includes waters, solutions, syrups, mucilages, spirits, infusions, decoctions, tinctures, fluid extracts, vinegars, wines, liniments, oleates, ointments, cerates, resins, oleo-resins, honeys; glycerites, mixtures, emulsions, elixirs, collodions, pills, capsules, powders, suppositories, bougies, plasters, papers, cachets, etc.

Lectures, recitations and laboratory work, first semester, first year.

PROFESSOR WULLING, MR. BACHMAN AND ASSISTANT.

- VI. *The Mathematics of Pharmacy.* While students are required to have a preparation in arithmetic and algebra before entering, they receive frequent drills at stated hours and as occasion requires or suggests throughout the entire course. Students are required to take a final examination in the subject at the end of the first year, at which examination they must attain a rating of at least eighty per cent.

- VII. *Pharmacy Quiz.* A thorough review of the work covered in II, III and IV. Two hours weekly. Second half of first semester and second semester of first year.

MR. BACHMAN.

- VIII. *Identification of Inorganic Official Preparations.* The study of the physical properties of official preparations.

First and second year.

MR. BACHMAN.

- IX. *Chemical Philosophy.* This course is preliminary to all other work in chemistry. It treats of the principles underlying the science, and endeavors to elucidate chemical facts and phenomena. The subject is divided into—

Chemical Statics, embracing the study of the theories of atoms and molecules, atomic weights, atomic and molecular volume, quantivalence, molecular structure, ions, electric qualities, etc., and—

Chemical Dynamics, the study of reactions and their equations, thermics, chemical properties in general, etc.

Two hours weekly, first semester, first year.

PROFESSOR WULLING.

- X. *The Pharmaceutical Chemistry of the Non-metals and their Preparations:*

Two hours weekly, second half of first semester of first year.

PROFESSOR WULLING.

- XI. *Pharmacopœial Inorganic Salts and their Official Preparations*, with especial reference to their description, properties and manufacture.

Three hours weekly, second semester, first year.

PROF. WULLING.

- XII. *Classification of Organic Compounds.* A continuation and amplification of the theoretical chemistry of the carbon compounds, serving as a fuller preparation for XIII.

Two hours weekly, second half first semester, second year.

PROFESSOR WULLING.

- XIII. Chemistry of the Pharmacopoeial Organic Compounds and their Preparations.** This course includes the critical study of cellulin and its derivatives, destructive distillation products, starches, sugars, fermentation products, organic acids, fixed oils and fats, volatile oils, waxes and animal fats, alkaloids, glucosides, animal drugs and products, etc. Two to three hours weekly during the second semester of the second year.

PROFESSOR WULLING.

- XIV. Pharmacopoeial Testing.** A critical study of the identity, purity, limit and percentage tests of the Pharmacopoeia and their application either wholly or in part to practically every official organic and inorganic salt and compound. Lectures, recitations and laboratory work, eight hours weekly, second semester, second year.

PROFESSOR WULLING, MR. BACHMAN AND ASSISTANT.

- XV. Quantitative Analysis of U. S. P. Salts and Preparations.** This course includes the gravimetric volumetric and gasometric determinations of the U. S. Pharmacopoeia, but not pharmaceutical assay work (XVII). Lectures, recitations and laboratory work. Fifteen hours weekly during the first ten weeks of second semester of second year.

PROFESSOR CAREL AND ASSISTANTS.

- XVI. Manufacture of Official Organic and Inorganic Salts.** The preparation of from twenty to forty official salts as time permits. Second semester, second year.

PROFESSOR WULLING AND MR. BACHMAN.

- XVII. Pharmaceutical Assay.** The quantitative determination of active constituents of a number of the potent organic drugs and preparations. Second semester, second year.

PROFESSOR WULLING AND MR. BACHMAN.

- XVIII. Synthetic Remedies.** A study of the chemistry of synthetic remedies in medical use. Second semester, second year.

PROFESSOR WULLING.

- XIX. Identification of Salts.** The study of the physical identity of the more important official inorganic and organic salts. One hour weekly during second semester of first year and entire second year.

MR. BACHMAN.

- XX. Micro-Chemistry.** A brief course is provided for seniors if time permits. Second semester, second year.

PROFESSOR WULLING.

- XXI. National Formulary.** This course includes the study of the National Formulary and the making of one or more members of each class of preparations. Lectures and laboratory work, second semester, second year.

PROFESSOR WULLING, MR. BACHMAN AND ASSISTANT.

- XXII. Homeopathic Pharmacy.** A brief exposition of the principles underlying homeopathic medication, with some laboratory work.

PROFESSOR WULLING, MR. BACHMAN AND ASSISTANT.

- XXIII. Incompatibility.** Therapeutic, pharmaceutical and chemical incompatibility is taken up in lecture and recitation work preliminary to XXIV.

Second semester, second year.

PROFESSOR WULLING.

- XXIV. Dispensing.** The study of the prescription and practical work in dispensing upwards of one hundred typical prescriptions. Lecture and laboratory work, second semester, second year.

PROFESSOR WULLING, MR. BACHMAN.

CHEMISTRY.

- I. General Chemistry.** This course includes a study of the chemical properties of the metallic and non-metallic elements.

Lectures, recitations and laboratory work, second semester, first year.

MR. DERBY.

- II. *Qualitative Analysis.* This course covers the common reactions of the metals and acids and their qualitative separation. The ionic theory and the law of mass action are discussed with especial reference to qualitative reactions.
Lectures, recitations and laboratory work, second semester, first year.
MR. DERBY.
- III. *Quantitative Analysis.* A study of the principles of quantitative determination. Preparatory to Pharmacy Course XV.
Lectures, recitations and laboratory work, first semester, second year.
PROFESSOR SIDENER.
- IV. *Organic Chemistry.* This course includes work in both the aliphatic and aromatic series and the preparation of the more important compounds.
Lectures, recitations and laboratory work, first semester, second year.
PROFESSOR FRANKFORTER.
- V. *Chemistry of Hygiene.* The chemistry of the atmosphere, water, soil, etc.; the sanitary examination of air and water.
Lectures, recitations and laboratory work, first semester, second year.
PROFESSOR FRANKFORTER.

PHARMACEUTICAL BOTANY AND MICROSCOPY.

- I. *The Comparative Morphology of the Cryptogams.* The course embraces the comparative morphology of the cryptogams. Especial attention is paid to the green algæ, the foundation of the vegetable kingdom. The other groups of algæ and the fungi are briefly treated, particular stress being laid on their economic relations to other plants, to animals and to man. About one-half of the semester is devoted to the study of the archegoniate series of plants. Numerous examples of liverworts, mosses, ferns, and their allies are studied in the laboratory, and the line of development which leads from the algæ through the archegoniate series to the seed plants is emphasized.
First semester, first year.
MR. BUTTERS.
- II. *The Morphology and Anatomy of the Higher Seed Plants.* In this course especial attention is paid to vegetable histology. The characteristic plant tissues are examined, and their arrangement is noted in roots, stems, leaves, fruits and seeds. The formation and occurrence of carbohydrates, glucosides, alkaloids, organic acids, resins, gums, gum-resins and oleo-resins are carefully studied.
Second semester, first year.
MR. BUTTERS.
- III. *Micro-Botany.* Designed to furnish practical training in the use of the microscope, in the preparation of material for microscopic examination, including the use of micro-chemical reagents, and in the representation by drawings of all structures observed.
The work of this course is co-incident with that of II and III.
MR. BUTTERS.
- These courses occupy the equivalent of six and one-half hours a week throughout the junior year. They aim to give a comprehensive and scientific view of the vegetable kingdom, to lay a broad foundation for the study of pharmacognosy, and throughout the course attention is frequently directed in the lectures to the wider relations of plants to one another and to animals, and to the discussion of the plant as a living unit, thus bringing before the class the fundamental problems of plant physiology and ecology.
The successful completion of the course in botany is prerequisite to the study of pharmacognosy.
The work of the three courses covers sixty-six hours lectures, and one hundred forty-four hours laboratory work.

PHARMACOGNOSY.

- I. *Crude Vegetable Drugs.*
The vegetable drugs of the United States Pharmacopœia are taken up in the following order: Roots, rhizomes, tubers and bulbs, woods, barks, leaves, herbs and flowers, fruits, seeds, plant exudations, resins, gum-resins, waxes and starches. Each drug is carefully examined, both

macroscopically and microscopically. Students are also provided with specimens for home study. The lectures give, in compact form, the history and important features of each drug, with consideration of its importance to the pharmacist. The quizzes include careful drill on the constituents, action and dose and official preparation of each drug considered. Identification receives careful attention and there are weekly tests of the student's ability. A short course is given in the microscopic examination of some of the more important alkaloids and glucosides, and of certain emulsions and inorganic salts, if time permits.

Text-book—Sayre's Organic Materia Medica and Pharmacognosy.

Reference Books—U. S. P., U. S. D., Fluckiger and Handbury's Pharmacographia, Tschirch's Atlas der Pharmacognosie, etc.

The drugs are considered in the following order:

Roots—Sarsaparilla (Mexican, Para and Honduras), senega, gentian, taraxacum, pyrethrum, inula, lappa, apocynum, stillingia, sumbul, asclepias, phytolacca, althæa, belladonna, bryonia, calumba, rheum, glycyrrhiza, (Spanish and Russian), ipecacuanha, pareira, krameria, rumex.

Rhizomes—Aspidium, zingiber (Jamaican, East Indian and African), calamus, veratum viride, iris, cypripedium, convallaria, triticum, sanguinaria, geranium, podophyllum, valeriana, arnica, serpentaria, spigelia, hydrastis, caulophyllum, cimicifuga, leptandra, gelsemium, menispermum.

Tubers and Bulbs—Jalapa, aconitum, colchicum, scilla, allium.

Twigs and Woods—Quassia, hæmatoxylon, santalum rubrum, guaiacum, dulcamara.

Barks—Cinchona (Rubra et Flava), prunus virginiana, vilburnum, prunifolium, viburnum opulus, rubus, quercus alba, granatum, aspidosperma, frangula, rhamnus purshiana, juglans, xanthoxylum, mezereum, gossypii radix, euonymus, quillaja, ulmus, sassafras, cascarilla, cinnamomum (Ceylon, Saigon and cassia).

Leaves and Leaflets—Pilocarpus, eucalyptus, uva ursi, senna (Alexandria and India), coca (Bolivian and Truxilla), belladonna, stramonium, hyoscyamus, tabacum, digitalis, matico, salvia, hamamelis, castanea, eriodictyon, chimaphila, buchu (long and short), rhus toxicodendron.

Herbs and Flowers—Santonica, caryophyllus, sambucus, calendula, cusco, arnica, matricaria, anthemis, rosa gallica, rosa centifolia, crocus, zea, chondrus, cetraria, cannabis indica, pulsatilla, scoparius, eupatorium, grindelia, tanacetum, artemisia, absinthium, lobelia, mentha piperita, mentha viridis, melissa, hedeoma, marrubium, scutellaria, chirata, sabina, chelidonium.

Fruits—Humulus, piper (longum, nigrum et album), cubeba, pimenta, rhus glabra, capsicum, colocynthis, cassia, fistula, chenopodium, illicium, cardamomum, vanilla, coriandrum, conium, anisum, carum, fœniculum (Roman and German), macis, aurantii amari cortex, aurantii dulcis cortex, limonis cortex, prunum, tamarindus (East and West Indian), phytolacca, ficus, rubus.

Seeds—Physostigma, amygdala (dulcis et amara), pepo, myristica, sinapis (alba et nigra), nux vomica, staphisagria, ricinus, tigilium, stramonium.

Miscellaneous—Guarana, lactucarium, alce (Socotrina, Barbadosensis, et Capensis), catechu, kino (Malabar et Pallas), opium, elastica, manna, saccharum, saccharum lactis, mel, acacia, tragacantha, mastiche, guaiacum, benzoinum, cambogia, asafetida, ammoniacum, scammonium, myrrha, copaiba, terebinthina, terebinthina canadensis, resina, pix (Burgundica et liquida), styrax, balsamum peruvianum, balsamum toltanum, camphora, thymol, menthol, ergota (Spanish and German), sassafras medulla, galla (Aleppo et Chinenis), gossypium purificatum, kamala, lupulinum, lycopodium, amylin, cetaceum, cera, cantharis, coccus, ichthyocolla, moschus, carbo animalis.

Besides the foregoing, a number of the more important unofficial drugs will also be discussed.

Eight hours weekly. Lectures, recitations and laboratory work. First and second semester, second year.

MR. BUTTERS.

II. Powdered Drugs.

This course consists of laboratory work and occasional lectures. The more important vegetable drugs are examined microscopically, in powdered form. Especial attention is paid to the identification of unknown

powders, and to the detection of the various forms of sophistication to which powdered drugs are subject.

Text-book—Schneider's Powdered Vegetable Drugs.

Reference Books—Koch's Drogenpulver, Meiler's Pharmacognostischer Atlas.

Three hours weekly, second semester, second year.

MR. BUTTERS.

MATERIA MEDICA.

I. *Inorganic Materia Medica.*

II. *Organic Materia Medica.*

The work in inorganic and organic materia medica is based principally on the U. S. P., but unofficial and synthetic drugs are also studied. The course includes the study of the general characteristics of drugs and of their physiological action. Pharmacodynamics, including the study of the identity and quality of drugs, shares attention in the course of pharmacognosy.

Five hours weekly, second semester, first year.

DR. BRACKEN AND DR. CONDIT.

PHYSIOLOGY.

- I. The work covers the study of the physiological properties of the cell, the nutritive media, the nervous mechanisms in general, muscular tissues, connective tissues and epithelial tissues. The subjects of anatomy and histology are touched upon sufficiently to lay the foundation for the proper understanding of physiological functions.

Special demonstrations are given upon animals and the living subject, illustrating the physiological functions in the muscular, nervous, vascular, respiratory and glandular systems, special attention being directed to the action of drugs and their effects upon the various systems.

Twenty-two lectures, first semester, first year.

PROFESSOR M. RUSSELL WILCOX.

- II. *Qualitative and Quantitative Urinalysis.* Lectures, recitations and laboratory work. The laboratory work includes the qualitative analysis of representative specimens of urine as regards their physical properties, inorganic and organic constituents, as well as the quantitative determination of chlorides, urea, ammonia, total nitrogen, sugar and albumin, together with the preparation of reagents.

Eight sessions, three hours each. Second semester, first year.

PROFESSOR BEARD AND DR. SEDGWICK.

- III. *Experimental Physiology.* (Post Graduate.) Laboratory work and demonstrations. A study of physiologic apparatus, electric stimuli and methods of experimentation; the demonstration and performance of experiments which illustrate physiologic function in the muscular, nervous, vascular, respiratory and glandular systems; and the study of the cardiac areas, the heart and respiratory sounds, and of pulse tracings, including training in the use of sphygmograph, the stethoscope, phonendoscope, etc.

Six hours a week, second semester.

PROFESSORS BEARD AND WILCOX AND DR. G. D. HAGGARD.

- IV. *Physiologic Chemistry and Microscopy.* (Post Graduate.) Laboratory work and demonstrations. A practical study of the several classes of proteids; of carbohydrates, fats, muscle and bone; of gastric juice, saliva, pancreatic juice and bile in their respective digestions; of glycogen, and of blood lymph, chyle and milk. Microscopic study of the carbohydrates in vegetable and animal forms; of the physiologic emulsions of fat; of the crystalline waste products, and of the physiologic conditions of the blood cells and of blood crystals. Practical instruction is given during this course in the enumerations of the blood cells, in the estimation of hæmoglobin and of the corpuscles in mass, in the spectroscopic examination of the blood in the determination of blood tests, and in the use of the polariscope.

Twelve hours a week, first half of first semester, second year.

PROFESSORS BEARD AND WILCOX AND DR. J. P. SEDGEWICK.

The College of Pharmacy.

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THERAPEUTICS.

In this course drugs are studied in groups, as governed by their physiologic action, and the therapeutic features of such groups are described. Remedial measures other than those depending upon drugs, are fully considered.

Lectures and recitations, four hours a week, first semester, second year.
PROFESSOR BRACKEN AND DR. CONDIT.

PHARMACEUTICAL MINERALOGY AND CRYSTALLOGRAPHY.

- I. *Mineralogy.* A study of the occurrence and properties of minerals of pharmaceutical importance: ores of metals used in pharmacy; non-metallic minerals and mineral waters in their mineralogic and geologic relations.

First semester, second year.

MR. FRANK F. GROUT.

- II. *Crystallography.* A survey of form and more evident physical characters as a basis for practice in sight recognition of economic minerals and their distinction from common rocks.

Second semester, second year.

MR. FRANK F. GROUT.

The work of I and II. requires one hour weekly throughout the year.

BACTERIOLOGY.

Lectures and demonstrations. The general scope of bacteriology, the history of its development and the biological and chemical problems involved in the life history of bacteria will be dealt with. The classification of the various bacterial forms, the methods of isolation and culture and the composition and manufacture of culture media will be studied until a thorough knowledge of technique is acquired. General and special study of the various antiseptics, disinfectants and bactericidal substances and conditions will be undertaken.

Laboratory work, involving the making of their own culture media by the students, the study of bacteria in cultures and under the microscope, technique of staining and other methods, including observations of chemical and biological peculiarities, will be thoroughly carried out. Testing of various germicides—chemical and physical—and the use of bacteriological methods in the examination of drinking water will form an important part of the work. Eighteen hours per week during the last eight weeks of the second semester, second year.

PROFESSOR WESBROOK, DR. CHOWNING.

This course is optional with students of pharmacy at present, but may be made obligatory.

CLINICAL MICROSCOPY.

Instruction includes (a) the macroscopical study of urine, its colors, sediments, and finer chemical tests; (b) the microscopical study of urinary sediments, including blood, pus, epithelial cells, casts, etc.; (c) the macroscopical and microscopical study of sputum, including the study of sputa from cases of pneumonia, pulmonary tuberculosis, asthma, chronic bronchitis, etc.

Lectures and laboratory work. Eight hours weekly; last third, second semester, second year.

(Post-Graduate.)

DR. GEORGE DOUGLAS HEAD.

TOXICOLOGY.

Organic and Inorganic. The chemistry of poisons and their antidotes and a study of symptoms, treatment and post-mortem appearances, including the simulation of symptoms of certain diseases, animal parasites, animal and vegetable products, etc.; the physiological action of important poisons and their antidotes; toxicological examination of blood, urine and various organs.

Lectures, recitations and laboratory work, first semester, second year.

PROFESSOR FRANKFORTER.

PHARMACEUTICAL JURISPRUDENCE.

A course of lectures in this subject is provided and seniors are required to attend. The lectures introduce the subjects of contracts, agency, commercial paper, insurance, and discuss the liability of retail and manufacturing pharmacists, etc.

PROFESSOR WULLING.

Twelve lectures, second semester, second year.

MINNESOTA PHARMACY LAW.

Several lectures fully elucidating the rights, duties, privileges and liabilities of pharmacists under the state law regulating the practice of pharmacy, are given by special lecturers near the close of the second year.

FIRST AIDS TO THE INJURED.

A series of lectures designed to qualify the pharmacist to administer upon emergency cases before the arrival of the physician.
Eight lectures, second semester, second year.

SPECIAL LECTURES.

From eight to twelve special lectures on subjects related to the practice of pharmacy are delivered by well-known pharmacists of the state at intervals during the college year.

TEXT AND REFERENCE BOOKS.

Pharmacy: U. S. Pharmacopœia, Remington's, Caspari's and Coblenz's Practice of Pharmacy, U. S. Dispensatory, National Dispensatory, Lyon's Pharmaceutical Assaying, Storer's Dictionary of Solubilities, Hager's Handbook of Pharmacy, Fluckiger and Hanbury's Pharmacographia, Era Formulary, American Pharm. Assoc. Proceedings, Berichte der Pharm. Gesellschaft, Peter's Ancient Pharmacy, National Formulary, Homeopathic Pharmacopœia, German Pharmacopœia, British Pharmacopœia, Volatile Oils, Kremer's Gildemeister & Hoffman, Dieterich's Manual, Ruddiman's "Whys in Pharmacy," Dorland's Am. Illus. Medical Dictionary, Dorland's Pocket Medical Dictionary.

Pharmaceutical Chemistry: Wulling, Sadtler and Trimble, Attfeld, Simon, Hoffman and Power's Examination of Medical Chemicals, Schmidt, Elsner.

General Chemistry: Remsen's Inorganic, Prescott and Johnson's, Watts' Fownes, Gmelin's Handbook, Roscoe and Schorlemmer, Watt's Dictionary, Fresenius, Sadtler's Industrial Organic Chemistry, Schimf's Quantitative Analysis, Schimf's Qualitative Analysis, Bellstein.

Prescriptions: Ruddiman on Incompatibility, Gerrish's Prescription Writing, Rice's Posological Tables, Scoville on Compounding, MacEwen on Dispensing.

Mathematics: Sturmer, Oldberg's Pharm. Problems, Weights and Measures, Helm and Morgan's Mathematical Chemistry, Metre System by Hamblin Smith; Stevens' Arithmetic of Pharmacy.

Materia Medica: U. S. Pharmacopœia, Sayre, Bracken, Maisch, U. S. Dispensatory, National Dispensatory, Culbreth, Bentley and Trimen's Medicinal Plants, Sollman.

Pharmacognosy: Sayre, Maisch, Rusby and Jelliffe, Fluckiger, Huseman and Hilger's Pflanzenstoffe, Base on Vegetable Microscopy, Hanbury's Pharmacographic and Science Papers, Moeller's Atlas, Tschirch and Oesterle's Anatomischer Atlas der Pharmacognosie, Herlant's Micrographies des Poudres Officinales, Schneider's Powd. Drugs; Greenisch and Collier, Vegetable Powders.

Botany: Coulter, Strassburger Noll and Shimper's, Bergen, Bastin, Vines, Bessey, Bentley, Gray, Cross and Bevan on Cellulose, Weisner's Rohstoffe, Strassburger and Hillhouse, Geddes, Zimmerman on Botanical Microtechnique, Warming and Posser, Koch's Drogenpulver.

Uranalysis: Tyson, Flint, Von Jaksch on Clinical Diagnosis, Simon's Clinical Diagnosis, Beale's Chart, Rieder's Atlas of Urinary Sediments, Hoffman and Ultzmann, Peyer's Atlas, Boston's Clinical Diagnosis.

Mineralogy: Dana.

Physiology: Kirk, American Text-book of Physiology, Simon's Physiological Chemistry, Martin's Human Body, Foster, Howell's American Text-book of Physiology.

Bacteriology: Schenck, Sternberg, Fraenkel, Abbott.

Toxicology: Reese, Taylor on Poisons, Brundage.

Latin: Robinson's Latin Grammar of Pharmacy, Jones, Harkness.

Miscellaneous: Gill's Oil Analysis, Mandel's Bio-Chemistry, Leffmann and Beam's Analysis of Milk, Wing's Milk and Its Products, Lassar and Cohn's Chemistry in Daily Life, Park's Hygiene and Sanitary Science, Stewart's Pocket Dose Book, Hare's Therapeutics.

THE WORK OF THE JUNIOR YEAR COVERS 1,131 HOURS, AS FOLLOWS:

Pharmaceutical Chemistry	Lectures and Recitations	64
Pharmaceutical Laboratory Work...	{ Lectures	66
	{ Recitations	54
	{ Laboratory	238
Physiology and Anatomy	Lectures	22
Botany and Microscopy	{ Lectures	72
	{ Laboratory	144
The several junior courses constituting Chemistry	{ Lectures	60
	{ Recitations	15
	{ Laboratory	158
Qualitative Analysis	{ Lectures	12
	{ Recitations	6
	{ Laboratory	140
Materia Medica	Lectures and Recitations	64
Identification	Laboratory	16
Total		1,131

If students do not bring credits for Latin and physics they will be required to take in addition:

Latin	72
Physics	72

THE WORK OF THE SENIOR YEAR COVERS 1,276 HOURS AS FOLLOWS:

Mineralogy and Crystallography	Lectures	36
Pharmacognosy	{ Lectures	54
	{ Laboratory	162
Identification	Laboratory	72
Organic Pharmacy	Lectures	48
Organic Chemistry	{ Lectures	36
	{ Recitations	15
	{ Laboratory	70
Uranalysis, Chemical	{ Lectures	20
	{ Recitations	10
	{ Laboratory	70

Toxicology	{	Lectures	32
		Recitations	15
		Laboratory	60
Chemistry of Hygiene	{	Lectures	20
		Recitations	10
		Laboratory	20
U. S. P. Quantitative Analysis	{	Laboratory	120
		Lectures	14
		Recitations	10
*Pharmaceutical Laboratory Work...		Lectures	54
Ditto		Laboratory	126
Dispensing		Lectures and Laboratory	96
Clinical Microscopy		Lectures and Laboratory	48
Jurisprudence		Lectures	12
Therapeutics		Lectures and Laboratory.....	40
First Aids		Lectures	8
Total			<u>1,276</u>

Special lectures from 6 to 12 during the year.

Bacteriology, optional.

* Includes U. S. P. Testing, Making of U. S. P. Salts, Assay, National Formulary Preparations and Homeopathic Pharmacy.

JUNIOR LECTURE AND LABORATORY SCHEDULE.

FIRST SEMESTER, 1907-1908.

MONDAY:	8:30 to 10:30	Pharmaceutical Chemistry.
	10:30 to 11:30	Botany: Lecture.
	11:30 to 12:30	Physiology: Lecture.
	1:30 to 5:00	Botany: Laboratory.
TUESDAY:	9:30 to 10:30	Pharmaceutical Chemistry.
	10:30 to 11:30	Pharmacy: Quiz.
	11:30 to 12:30	Physiology: Lecture.
	1:30 to 5:00	Pharmacy: Laboratory.
WEDNESDAY:	8:30 to 12:30	Pharmacy: Laboratory.
	1:30 to 4:30	Botany: Laboratory.
THURSDAY:	8:30 to 9:30	Pharmacy: Quiz.
	9:30 to 10:30	Pharmaceutical Chemistry.
	10:30 to 12:30	Botany: Lecture.
	1:30 to 5:00	Pharmacy: Laboratory.
FRIDAY:	8:30 to 12:30	Pharmacy: Laboratory.
	1:30 to 4:30	Botany: Laboratory.

SECOND SEMESTER, 1907-1908.

MONDAY:	8:30 to 9:30	Materia Medica.
	9:30 to 10:30	Pharmaceutical Chemistry.
	10:30 to 12:30	Pharmacy: Recitation.
	1:30 to 5:00	Chemistry: Laboratory.
TUESDAY:	9:30 to 10:30	Chemistry: Recitation.
	10:30 to 11:30	First Aids.
	11:30 to 12:30	Special Lecture.
	1:30 to 4:30	Chemistry: Laboratory.
WEDNESDAY:	4:30 to 5:30	Latin.
	8:30 to 9:30	Materia Medica.
	9:30 to 12:30	Botany: Laboratory.
THURSDAY:	1:30 to 4:30	Chemistry: Laboratory.
	8:30 to 9:30	Materia Medica.
	9:30 to 10:30	Pharmaceutical Chemistry.
	10:30 to 11:30	Botany: Lecture.
	11:30 to 12:30	Chemistry: Lecture.
FRIDAY:	1:30 to 5:00	Chemistry: Laboratory.
	8:30 to 10:30	Materia Medica.
	10:30 to 11:30	Chemistry: Lecture.
	11:30 to 12:30	Botany: Lecture.
	1:30 to 4:30	Chemistry: Laboratory.
	4:30 to 5:30	Latin.

SENIOR LECTURE AND LABORATORY SCHEDULE.

FIRST SEMESTER, 1907-1908.

MONDAY:	8:30 to 9:30	Therapeutics.
	9:30 to 10:30	Pharmacognosy: Lecture.
	10:30 to 11:30	Identification.
	11:30 to 12:30	Organic Chemistry: Lecture.
	1:30 to 5:00	Organic Chemistry: Laboratory.
TUESDAY:	8:30 to 10:30	Pharmacognosy: Laboratory.
	10:30 to 11:30	Crystallography and Mineralogy.
	11:30 to 12:30	Organic Chemistry: Lecture.
	1:30 to 5:00	Organic Chemistry: Laboratory.
WEDNESDAY:	8:30 to 9:30	Organic Pharmacy: Lecture.
	9:30 to 10:30	Therapeutics.
	10:30 to 12:30	Pharmacognosy: Laboratory.
	1:30 to 5:00	Organic Chemistry: Laboratory.
THURSDAY:	8:30 to 10:30	Organic Pharmacy: Lecture.
	10:30 to 11:30	Crystallography and Mineralogy.
	1:30 to 5:00	Organic Chemistry: Laboratory.
FRIDAY:	8:30 to 9:30	Therapeutics.
	9:30 to 12:30	Pharmacognosy: Laboratory.
	1:30 to 5:00	Organic Chemistry: Laboratory.

SECOND SEMESTER, 1907-1908.

MONDAY:	8:30 to 12:30	Pharmaceutical Laboratory.
	1:30 to 5:00	Quantitative Analysis.
TUESDAY:	8:30 to 12:30	Pharmaceutical Laboratory.
	1:30 to 5:00	Quantitative Analysis.
WEDNESDAY:	8:30 to 12:30	Dispensing.
	1:30 to 4:30	Pharmacognosy Laboratory.
THURSDAY:	8:30 to 12:30	Dispensing.
	1:30 to 5:00	Quantitative Analysis.
FRIDAY:	9:30 to 10:30	Pharmacognosy Lecture.
	10:30 to 12:30	Organic Pharmacy.
	1:30 to 5:00	Quantitative Analysis.
SATURDAY:	9:00 to 12:00	Pharmaceutical Laboratory is open for the benefit of students who may be behind in any of their work.

Pharmaceutical laboratory work includes U. S. P. Testing, National Formulary Preparations, Manufacture of U. S. P. Salts, Assay, Homeopathic Pharmacy, etc.

Quantitative Analysis includes gravimetric, volumetric and gasometric estimation.

ENTRANCE REQUIREMENTS.

A.—To the Two-Year Course.

While nearly all students enrolled in this college are graduates of full four-year high school courses, such a training prior to entrance is not obligatory at the present time. The requirements, however, are being raised gradually in such a way that soon they shall be a full high school preparation or an equivalent.

- I. Minimum requirements applying to all candidates seeking admission to the 1907-'08 course.* Applicants may be admitted without examination if they bring certificates of graduation from, or standing in, institutions of the collegiate grade or present other credentials showing that they have successfully completed the branches of study embraced in a full four-year high school course, or an equivalent, provided that among the branches completed are:

English, two years, including the principles of composition and practice in written expression.

Algebra, one year, elementary, up to beginning of higher algebra.

Geometry, one year, elementary.

Physics, one year, elementary.

Latin, two years: grammar, one year; Caesar (four books), one year.

- II.* Other applicants must pass examinations in the branches above specified, i. e., in English, algebra, geometry, physics and Latin, or present satisfactory evidence of having completed these branches, for which substitutes cannot be accepted.

Students will be allowed to carry not more than one condition which, however, must be removed before the final examinations in the first year subjects.

B.—To the Three-Year Course.

The minimum requirements for admission to the three-year course are the same as those for admission to the two-year course *II.*, with the exception that students may carry as conditions not more than three of the entrance subjects among which English cannot be. Students must pursue the branches in which they are conditioned during their first year and pass examinations in them or present evidence of having satisfactorily completed the branches. The subjects are not taught at the college, but may be taken at the Academy near by, or at the city high schools or with private tutors. The University Y. M. C. A. usually establishes courses for the benefit of students conditioned in entrance branches.

Applicants whose preparatory course of study has not conformed precisely to the requirements above enumerated will be allowed to offer, in lieu of a portion of these requirements, equivalent preparation in similar branches of study; and if they show, by examination, or by other evidence, that their preparation has been substantially equivalent, such branches will be accepted as substitutes for those omitted.

The examinations for entrance are conducted by the faculty of the college of pharmacy, in the pharmacognosy rooms, beginning at 9:00 a. m., on Tuesday, September 17, 1907. Lecture work begins as soon as possible after the examinations, usually the following day.

All applicants are required to furnish a certificate of good moral character.

LENGTH OF COURSE.

The complete course extends over two years of nine months each. Students may arrange their work so as to take the course in three years, without additional expense to them. It is quite possible that three years' attendance will be required of students in this college in the near future.

The fifteenth annual course begins Tuesday, September 10, 1907, at 9:00 a. m., at which time registration commences in the Dean's office. Registration closes on Tuesday, September 17. Regular work begins the following day.

The college year is divided into two semesters; the second beginning February 4, 1908.

REGISTRATION.

All applicants for admission to the regular courses must present to the Dean not later than September 17, their school or high school certificates, diplomas or such other credentials as they may wish to offer toward meeting in whole or in part the entrance requirements. If these are found satisfactory the applicant will register in the office of the University registrar, who will issue a card to the University accountant to whom the applicant will pay the tuition and breakage fees and microscope rental and receive receipts therefor. Registration is completed by depositing these receipts in the office of the Dean. The student is then classified.

PROFESSIONAL EXAMINATIONS.

Examinations are held at the end of the regular school year and during the last week of the first semester, and are supplementary to the written

recitations and quizzes that are held at frequent intervals during the term, and with them form the basis of final determination of fitness for promotion or graduation. Students are rated throughout the year, and all students who have a standing of ninety per cent, or more, in certain of the branches, may not be required to take the final examination in those branches.

Students are not required to write graduating theses, but instead, they keep complete records of all their laboratory work. The records are to be kept in substantially bound books, to be approved by the faculty. The respective professors call for the records for inspection and rating once a month or oftener. Duplicates of records are to be furnished the college by the students. The college provides the paper.

ATTENDANCE.

In order to become eligible for final examinations, students are required to attend at least four-fifths of the lectures in each course. This rule is not intended for the benefit of those who seek admission after the opening of the college year, but is designed to cover cases of sickness or unavoidable absence. It does not apply to laboratory courses which must be taken in full and must be entered during the first week in which they begin.

STANDING.

The standing of students is determined by the results of recitations, written examinations, laboratory work and attendance. It is indicated by the terms "passed," "conditioned," "incomplete," or "failed." Conditions may be removed as indicated below. Incomplete work must be made up before the final examinations of the following year.

CONDITIONS.

Students having conditions in more than one major or in more than two minor subjects of the first year, cannot enter upon the second year's work. All entrance conditions must be removed before the next spring examination. Candidates for graduation must have removed all conditions before entering upon the second semester of the graduating year.

Condition examinations are held during the first week of the course in September. The dates are posted in June. Conditioned students are required to inform themselves as to these dates as soon as they learn that they are conditioned, as no other notice is given.

All who carry a condition and fail to remove it within one year will be charged an extra examination fee.

Students who carry a condition into a succeeding year may find a conflict of lecture or laboratory hours. In such cases they are to give preference to the lower course.

ADVANCED STANDING.

Applicants for advanced standing must pass the entrance examinations or present the usual equivalents. They must furnish satisfactory evidence of time spent and subjects covered in previous professional studies, and must present themselves at the above date and pass the examinations of all departments in which they wish to be exempt, if such examinations are deemed necessary by the professors in charge of the various departments. Students will not be permitted to substitute private work in any branch for the regular course work.

DEGREE.

This college confers the degree of Bachelor of Pharmacy, (Ph.B.), upon the graduates of the regular course.

REQUIREMENTS FOR GRADUATION.

Regular attendance at lectures, recitations and laboratory exercises is required. Students will not be permitted to present themselves for final examination unless they have been in attendance upon at least seven-eighths of the required number of exercises.

Every person upon whom the degree is conferred must be of good moral character, and must be at least twenty-one years old; must have attended two full lecture and laboratory courses, the last at this college, and must have passed a successful examination in the subjects required for graduation.

Drug store experience is not a requirement for graduation.

Those who fail to appear for examination after having paid their diploma fee, or those who do not pass satisfactorily, will be permitted to present themselves at any subsequent examination, upon payment of an additional fee of five dollars, and complying with all other requirements.

GRADUATE COURSE.

In addition to the regular course this college offers two graduate courses, the first continuing through one college year and leading to the degree of "master of pharmacy," and the second continuing through an additional year or longer, and leading to the degree of "doctor of pharmacy." The first graduate course, the one leading to the master's degree,

is now in operation. It is intended that the curriculum shall include higher pharmaceutical chemistry, pharmaceutical assaying, higher organic chemistry, proximate and ultimate analysis, chemistry of food, spectroscopic work, therapeutics, and bacteriology, and a theses of at least 3,000 words, embodying the results of original work, but this curriculum may be changed by the faculty if occasion or experience require.

The requirements for admission are a diploma from a Minnesota high school of the first grade, or an equivalent; a diploma from a college of pharmacy whose curriculum, extent and kind of work and length of under-graduate course are equal to those of the under-graduate work of this college; an acquaintance with either German or French sufficient to enable the student to read and understand the scientific literature of those languages, and a certificate of registration as pharmacist from any state board of pharmacy. The fees for this course will be seventy-five dollars, and, upon graduation, an additional fee of ten dollars for diploma. The rules relating to damage, waste and breakage in laboratories are the same as those applying to the undergraduate course.

The course leading to the doctor's degree will begin as soon as there are sufficient applicants.

BREAKAGE AND LOSS.

In each laboratory course the student will be assigned a certain amount of apparatus and material, for which he will give receipt. At the end of each course, if such apparatus and material are restored in good condition, this receipt will be returned to him.

All apparatus lost or damaged will be charged to him, and must be paid for before he can receive credits for his course, or take his annual examinations.

CAUTION FEE.

A deposit of ten dollars will be made with the accountant each year, by every student, at the time of enrollment as a caution fee. This fee is intended to cover the cost of unnecessary damage to or in the college buildings and of breakage and loss of laboratory apparatus and material. It will be returned to the student at the close of each year, minus the cost of articles assigned to him, that are not returned in good condition, or of damage to college property for which he is individually responsible. If responsibility for such damage cannot be individually fixed, a pro rata charge upon all students will be made.

FEES.

TWO YEAR COURSE.

First year	\$75.00
Second year	90.00
	————\$165.00

THREE YEAR COURSE.

First year	\$45.00
Second year	55.00
Third year	65.00
	————\$165.00

There are no other fees in the regular course. Fees are payable at the time of registration. Those desiring to take special work will be required to pay fifteen dollars a subject in the didactic courses and twenty-five dollars in the laboratory courses.

Students will be charged for laboratory material if used unreasonably. At the end of the laboratory courses students will be required to pay for breakage and damage to utensils in their care. If a student is careful this charge need not amount to more than two or three dollars. Students are to provide themselves with a designated set of metric weights, a set of apothecary's weights and steel spatulas. The expense of these is within three dollars. Students using platinum crucibles are charged for same. Upon the return of the crucible in the original condition the charge is cancelled; if the crucible is in any wise damaged the full value is collected from the student. A rental of two dollars per college year is collected for use of a microscope. All money is payable to the accountant of the University, who will give receipts which must be deposited in the Dean's office.

Fees will not be returned, except in case of discontinuance for sufficient reason before the student has been assigned to a place in the laboratory.

GENERAL STATEMENT.

Those who do not pass the entrance examinations, may enter and complete their course in three years, provided they pursue the subjects required for admission, in addition to the professional work that may be assigned to them, and pass their entrance examinations, before the end of the first year. There are a number of preparatory schools in the neighborhood of the University, where the subjects required for admission may be pursued.

Students are permitted to use their own crude drugs for the making of preparations, provided such material is approved by the Dean of the

college as suitable to demonstrate the lesson in hand. Finished products from such material, if of satisfactory quality, are at the disposal of the student, unless made with the tax-free alcohol belonging to the college.

Absence will not be excused, unless satisfactory reasons are given to the professor in charge. Habitual absence without a satisfactory excuse, continued indifference to study, or persistently poor scholarship may subject the student to temporary or permanent suspension. Students are earnestly requested to be present at the beginning of the school year. Special students, however, may enter at any time; they will not be rated on their work, nor will they be examined unless they make special request therefor. Any of the facilities for work in the University are open to the students of this college, subject to the approval of the Dean. Opportunity is afforded to do advanced work in all branches. Text-books may be obtained after coming to the University.

Rooms and board convenient to the college can be obtained at prices ranging from \$3.00 to \$5.00 per week, according to accommodations and furnished rooms without board, from \$5.00 to \$10.00, and unfurnished rooms from \$4.00 to \$7.00 per month.

A list of rooms and boarding places is kept by the secretary of the University Y. M. C. A., to whom inquiries or applications may be addressed.

POSITIONS FOR GRADUATES.

The demand for graduates of this College has always been greater than the supply and is continually growing. The rule is that practically all of the senior class are engaged before graduation. This College is recognized in every state, including those in which standards of efficiency have been established, and its graduates are everywhere admitted to Board examinations.

STATE BOARD OF PHARMACY.

The Board meets at the college four times each year. For information concerning the Board address the Secretary, Mr. Chas. J. Moos, 502 Bank of Commerce Building, Minneapolis, Minn.

COLLEGE OF PHARMACY ALUMNI ASSOCIATION.

The Alumni Association meets annually in the college building the day before commencement, at 3 p. m. Every member of the Association is urgently requested to report change of address to the secretary.

COMMUNICATIONS.

Address communications to the Dean, Professor Frederick J. Wulling, University of Minnesota, Minneapolis, Minn.

Students.

JUNIORS, 45.

COLLEGE OF PHARMACY.

Alcott, Dolph C., Lakefield.	Hanson, Wm. C., Sleepy Eye.
Anstine, George C., St. Paul.	Hotvedt, Elmer L., Eau Claire, Wis.
Becker, Frank A., Montgomery.	Hohn, Walter G., St. Paul.
Baukol, Harris, Starbuck.	—Heath, Marie G., Miss, Riga, N. D.
Breckenridge, John Y., Pine City.	Jones, Edward P., Blue Earth.
Casey, John A., Aitkin.	Klovstad, Thos., Milan.
— Carlson, Helma A., Miss, Erskine.	Kelly, Charles F., Webster, S. D.
— Cochrane, Edith, Miss, St. Paul.	Kellam, Ansel B., Heron Lake.
DeWitz, Frank A., Rochester.	Kusterman, Frederick G., St. Cloud.
Diessner, Charles O., Waconia.	Kurth, Asa F., Hendricks.
Doty, Archie G., Eyota.	Lambert, Ray R., Royalton.
Earle, Fred W., Rochester.	Lovdahl, Arthur E., Park Rapids.
Eckstein, Arthur W., New Ulm.	McMiller, Paul R., Carrington, N. D.
Eichstadt, John, Stewartville.	—Nesse, Ella M., Miss, Mabel.
Emmans, Floyd H., Minneapolis.	Pladson, Ingvald S., Glenwood.
Erckenbrack, Earl S., Parkers Prairie.	Puhl, Richard H., Menomonie, Wis.
Green, Everhard, Hankinson, N. D.	— Snyder, Bessie E., Hector.
Gunderson, Alfred J., Pelican Rapids.	Stoppel, Ernest A., Rochester.
Gronvold, Bernt O., Kenyon.	Spengler, Wm., St. Paul.
Holmgren, George A., Breckenridge.	Stover, Charles E., Minneapolis.
Holt, Dennis H., Rochester.	Welch, Leo S., Glencoe.
Hooper, Archie J., Minneapolis.	Zender, Charles H., Henry, S. D.
Hanson, Harry, Rochester.	

SENIORS, 30.

COLLEGE OF PHARMACY.

Aker, Emil C., Montevideo.	Gronvold, Bernt O., Kenyon.
Allen, C. Herbert, Minneapolis.	Hanscom, George S., Willmar.
—Austin, Albertha J., Milbank, S. D.	Holmes, Robie E., Billings, Mont.
Blosmo, Oscar, Menomonie, Wis.	Jamieson, Roy R., St. Paul.
Bohland, Carl P., St. Paul.	Kelly, John V., St. Paul.
Bolton, John F., Plainview.	Larson, Ned L., Atwater.
Bowman, Fred M., Browns Valley.	Knapp, John A., River Falls, Wis.
Brede, Otto H., Minneapolis.	Nott, R. J., Brownton.
Carlson, Arthur E., Willmar.	Olverson, Oscar A., Clark, S. D.
—Caton (Mrs.), Charlotte E., Minneapolis.	Quick, Frank R., St. Paul.
Cleveland, Zina, Northfield.	Schreiter, Norman C., Red Lake Falls.
Day, Benjamin H., St. Paul.	Thompson, Charles A., Buffalo.
Deterling, Bernhard A., Gaylord.	Turton, Floyd E., Alexandria.
Dretchko, Alvin LeRoy, Winthrop.	Weber, George C., Rochester.
Egbert, Henry G., Winona.	Van Campen, Harry Alton, Cannon Falls.

SPECIAL STUDENT, 1.

Frost, W. A., Ph. G., St. Paul.

